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VETERINARY MEDICINE

April 1929

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Small Animal Practice Issue

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No. 4
VOL. XXIV

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D. M. Campbell, Editor A. T. Kinsley, Associate Editor

A Small Animal Practice Issue

WITH this issue VETERINARY MEDICINE presents another of its Special Numbers. The special issue on poultry practice in May and the special issue on swine practice in October of last year were received by our readers with an acclaim beyond our expectations, notwithstanding the high merit of both issues, and the importance of both subjects was fully appreciated by the publishers. That those issues were invaluable to the poultry industry and the swine industry respectively, and that they were the means of increasing the usefulness, the practice and the income of a large number of veterinarians is indubitable from the ample evidence in hand.

The quality of this issue is well up to the high standard set by the two preceding special issues; the subject has a widespread appeal. No doubts are entertained as to the welcome it will receive from our readers, or as to its usefulness to the profession and those it serves. Credit for the excellence of the material contained in this issue is due first of all to Dr. H. J. Milks of the New York State Veterinary College at Ithaca, under whose editorial supervision it has been prepared, and secondly to the able assistants he has selected to prepare articles supplementing his own and rounding out the whole to make it the most comprehensive discussion of this subject yet presented in a magazine. The object of this issue, obviously is to be of the greatest value to general practitioners, but it is hoped and confidently believed that it will be not without merit for the highly skilled specialist in small animal practice.

A Diversified Practice Conduces to Success

For a score of years and more, VETERINARY MEDICINE has contended, that veterinarians should minister to the ills of all domestic animals in their several communities; that they should practice all that is implied by the word veterinarian; and that only by so doing can they prevent the intrusion of the less qualified or the wholly unqualified into fields of endeavor that are rightfully the veterinarian's. And, further, that save in exceptional instances, upon a wide diversification in his practice depends a veterinarian's greatest prosperity and security for the future. The changing world in this twentieth century, the flux of this postwar period with its revolutionizing methods, its shifting conditions and its overturning of whole industries, will promptly

submerge a profession, a trade or an industry that fails to adapt itself promptly to conditions that change overnight.

Changes in a Progressive Veterinarian's Practice

The typical successful veterinarian of today is one who a score of years ago conducted a lucrative horse practice. Five years later, he was an expert in the diagnosis of hog-cholera and vaccination for its prevention, was doing considerable tuberculin testing, spaying feeder heifers and extending his dairy practice. Another five years found him cooperating with the live stock authorities in tuberculosis eradication, educating his clients in the desirability of parasite control, much interested in the diseases of swine other than hog cholera, with a recognized reputation in diseases and surgery of the udder, was studying contagious abortion, handling some small animal practice and responding to occasional calls to poultry flocks. Another five years found him with an established reputation built upon the results of his skill and with calls for his services in all manner of ills of swine, cattle, poultry and pet animals; and such horse practice as had survived the changes still demanding his attention. Practice is good with him at present and improving. He is not complaining. If the grain farmers must defer paying him unseemingly, the dairyman from his weekly check for his produce tides him over. If the swine raiser cannot pay till he markets his hogs, the poultryman comes to his rescue out of his new prosperity, and all the time the industrial worker from his fat pay envelope and the tradesman with his profits has the wherewith to pay for services rendered to his pets. In his community the stock remedy vendor and the worm expeller peddler have found "picking poor." Such a veterinarian has progressed and is progressing; he has anticipated the changes that have come about in his field and profited by them. His eyes are on the morrow, he is preparing for bigger things.

The Veterinarian's Case Not Peculiar

Veterinarians when they contemplate the supplanting of the horse on our streets and highways by automotive power and the depression in agriculture, are sometimes inclined to think that in the post-war changes they have been specially selected by the gods of fortune for the victims of an unpropitious fate. That others have had their problems too may be seen by even casual inspection. A writer has recently asked: "Where are the village blacksmiths, the harness shops, the cobblers of our childhood—the ditch diggers, hod carriers, wheelbarrows and shovels, carpets, stove pipes and corsets—high shoes, stiff collars, fancy vests and night shirts and even the home made bread that mother used to make." The answer is sufficiently obvious. Another illustration: For a number of years within the memory of all, phonograph manufacturers experienced unheard of prosperity — the radio was invented and the Victor Company passed its dividends and all the rest went to the industrial hospital. Recent statistics show that the average life of manufacturing concerns is seven years, and of retail stores 7.1 years. The average term of veterinary practice is twice that period.

Kaleidoscopic Conditions

Improved machinery and increased efficiency in our factories has supplanted 917,000 workers since 1920. Improved methods has supplanted 240,000 employes of our railroads and 800,000 fewer are engaged in agriculture than in 1920. In round numbers, 2,000,000 persons have been thrown out of employment. But they haven't starved. 100,000 became chauffeurs on automobile buses, and 660,000 were added to automobile service stations, filling stations and greasing "palaces"; 100,000 were added to the servicing of electrical equipment; 100,000 became insurance agents and 230,000 teachers in our public schools. 125,000 were added to the payrolls in the motion pic-

ture industry; 170,000 additional found employment went in barber shops and beauty parlors while hotels and restaurants increased their servitors by 525,000. Veterinarians have been called upon for no greater adaptive changes than these, nor for as sudden adaptations.

Replacing the horse on the streets and highways and to some extent on the farms by automotive power did away with the need for a large part of the veterinary practice of the type that prevailed two decades ago. Building hard-surface roads enabled the practitioner to serve a far larger area than previously. It is possible that one-fifth the number of veterinarians engaged in equine practice in 1909 might serve for this practice today. Unfortunately, the field of veterinary service has been enlarged by too many only as they were forced by necessity into new lines of practice. Others have extended their fields as rapidly as opportunities offered. Naturally the latter class are the more fortunately situated.

"It Can't Be Done in My Locality"

The inertia that opposes new ventures by the average man; particularly in the man approaching life's meridian or beyond it, is well understood and frequently exemplified at veterinary meetings. Numberless times has the writer heard veterinarians say: "There's no dairy practice to be had in my locality, the farmers treat their own cattle. You can't do anything for a cow anyhow. If she has mastitis she will lose the quarter no matter what you do. If she has indigestion, medicine won't help her and as for cleaning a ripe one—excuse me. I don't want any of it in mine," or "The farmers in my locality wouldn't call a veterinarian to see a hog on a bet. What good can you do anyhow? Percussion, auscultation, pulse and temperature mean nothing in a hog. I don't know anything about a hog anyhow." A few years later the speakers were to be found busily and lucratively engaged in the kinds of practice they formerly derided, or working for the government or running a gasoline filling station. How much more profitable for them to have sought the wider field instead of being driven to it! One doesn't hear such expressions much anymore with regard to dairy and swine practice. Those who are telling how it can't be done, in their particular localities, in poultry and small animal practice, have the floor now, in the corridor just outside veterinary meetings. They are just as wrong as the others were. Their counsel just as disastrous.

Small Animal Practice to Be Had in Every Locality

There is a mass of incontrovertible experience to substantiate the statement of a veterinarian of unusually wide experience and exceptional opportunities for observation, who said at a recent state veterinary meeting:

"Small animal practice can be made to augment the income of the general practitioner in *any* locality. I have known many practitioners located in towns of less than 5,000 inhabitants who in a few years have developed a small animal practice from nothing at all to $100.00 a month or more, and not hurt their other practice a single dollar's worth. In fact, by their small animal practice they formed contacts that improved their practice with the larger animals. One veterinarian I know in a small mining town of less than 2,000 inhabitants, because of the use of automotive power, was through and on the point of leaving almost on his uppers. I persuaded him to try small animal practice and in two years, he was doing more than $250.00 a month of such practice. I can't think of a less promising field for such practice than an impoverished mining community.

"It is a favorite ruse of the country practitioner to excuse his laziness or something else by saying that the farmer won't pay a veterinary bill for his dog because the dog is not worth it. The statement is not a fact. I say to you that the man who will keep a dog, pay taxes on him, feed him and fight his neighbor if he kicks him, will pay to have

that dog cared for when he is sick, and to have him freed of worms, and to have him vaccinated when there is rabies in the community.

"A farmer is a human being and behaves as such. He will buy a radio less reluctantly than he buys a washing machine and he will do more for his dog that he can do without, than he will for his hogs on which his livelihood may depend."

Continuing in his forceful way, the speaker said: "There is no veterinarian qualified for general practice so dumb he can't qualify himself for small animal practice if he will try. Equipment of two kinds are needed, mental and material. Of these, the mental equipment is far and away the more important and should come first; the other can be improvised and improved as circumstances permit.

"He will need in his library:

"1. All our veterinary journals; he must keep up on what others are doing in this line.

"2. At least two dog journals. He should have the American Kennel Gazette and a local dog publication. I recommend also the Dog World.

"3. As a minimum, the following books: Spaulding's Your Dog and Your Cat—How to Take Care of Them; Muller & Glass' Diseases of the Dog and Their Treatment; Brumley's Diseases of the Small Domestic Animals; Kirk's Diseases of the Cat and Its General Management; Hobday's Surgical Diseases of the Dog and Cat; Kirk's Canine Distemper; and Bradley's Topographical Anatomy of the Dog; Hobday's Atlas of the Anatomy and Physiology of the Dog; and finally Judy's Dog Encyclopedia.

View of the operating room in Horning and McKee's Dog and Cat Hospital showing left to right, ether machine, operating table, wash basin, stomach tube rack, waste can, electric sterilizer, irrigator, Mayo instrument table and solution pan.

The Relation of Small Animals to General Practice

By W. C. BUCK, Dansville, New York

IN THE early part of the 20th century it became quite evident to the general practitioner, in the larger cities, that the advent of the automobile would soon make inroads into his business that were bound to be more or less disheartening. Naturally if he was of the progressive type he soon set about to find ways and means to combat this situation, or rather to adapt himself to these rapidly changing conditions. This most of the men accomplished by specializing in the care and treatment of the small animals.

Of course this effect on general practice has not been so keenly felt by the rural or country practitioner until within the past ten years. At that time, in the community in which the writer is practicing, there were thirty-six well equipped stables of general purpose horses. Today there are left but two and they have only one team each.

It is a peculiarity of human nature, that most people, at the bottom of their hearts, love animals, and are desirous of having something alive around them. When the horse and carriage were popular much less thought was given to the smaller animals as pets, but since the advent of the automobile a great many people satisfy that desire for pets by the companionship of the smaller animals. Thus there has been created a demand for capable men to care for these pets during their illnesses. Not only is this true in the large cities but in the rural districts as well; so that today the relationship of the small animals to the general practice is just as important as any other branch of the profession.

There has been no time in the history of our country when the province of the veterinary profession was as broad as it is today. We are in every sense of the word veterinarians, living up to its true definition; namely, one who administers to domesticated animals. Since it is our privilege to administer to domestic animals, then it is our duty to become adept in the care and treatment of our small dumb beasts as well as the large ones.

The process of building up a small animal practice does not differ materially from that of building up a large animal practice, except that it is quite necessary to have some sort of place in which to care for these pets; that is, a few clean, well-heated and lighted kennels.

No two men are constituted alike; neither are the clients of two practitioners alike. As these men and their clients differ, so must the manner in which they conduct their respective practices differ. No specific rules or regulations can be laid down for the conduct of a given practice, except by the man who is conducting it and giving it his daily attention.

The writer, within the past six years has been able, through diligent study and co-operation of our instructors at the state college, to build up a very lucrative small animal practice in connection with his general practice. Therefore it is our contention that this can be accomplished by *any* general practitioner, to the benefit of the community in which he lives, and to his own material benefit.

There is no question but what the practitioner who will treat the small animal has a higher standing in his community than our predecessors who devoted their entire time to equine practice. Perhaps it is because we come into closer contact with the public and are treating something that is close to them, something that has a higher value than money can buy.

The Clinical Examination of the Dog*

By EDWIN J. FRICK, Manhattan, Kansas

IN MAKING an examination of a dog we must first consider the breed. In the canine there is such a variety of size, shape, and temperament that what would be normal for one breed would be an abnormality in another. Take for example the English bull dogs whose bench or bowlegedness of the front legs, though of good type for him would be considered as rickety or deformed if found in a greyhound. The same is true of other parts of the body. The dome-like head, normal for a Pekingese or Japanese spaniel, would be considered appleheadedness or hydrocephalic in a pointer or long nosed breed; then again the natural nervousness of the Pomeranian or poodle would indicate a disease symptom if found in a St. Bernard or Newfoundland. It is readily seen that a good knowledge of the breeds, and there are 99 of them in this country, is essential to the proper understanding of the dog.

The second major consideration is the history of the patient. Obtain as much information as possible; some of it may have a very direct bearing on the examination. The dog may have been exposed to some disease, such as distemper, rabies, mange, etc. It may be pregnant. It is advisable to know how long the patient has been ailing, what treatment was administered, if any, what feed the animal has been having, what symptoms have been noticed, and any other information that may be needed to fit in with your examination as you proceed.

We next consider the age and sex of the animal. Pups are commonly troubled with roundworms, indigestion, improper feeding, teething spells, etc. While in the old dog we look for malignant growths, canine typhus, enlargement of prostate gland, and similar disturbances.

So far we have not touched the patient with our hands. We have accumulated a lot of information concerning him and we have been watching his general attitude, noting his body condition as regards nutrition, etc. We may even have seen him walk and checked his coordination of movements.

By this time the patient's confidence should have been gained. Talking to the dog in a pleasant tone finally allows us to grasp hold of the neck after a few gentle pats on the head. In grasping the dog use the flat of the hand toward the head as he is less liable to bite. If the dog is decidedly unfriendly and shows any inclination to bite let the owner place a muzzle on him. If you have a fondness for being bitten and for worrying about infection or if you like to take the Pasteur treatment, just allow yourself to get in the habit of examining dogs without muzzling them and you will attain these objectives.

We are now ready for the examination proper. For convenience this is divided into two parts. (1) A general examination and (2) a special examination. The former consists in checking all the systems, circulatory, digestive, respiratory, nervous, muscular, osseious, sexual and urinary. The special examination covers the findings from skin scrapings, feces examination, X-ray examinations, urine analysis, and blood smears.

Our procedure in making the general examination is to start with the head. Notice the nose—is it dry and hot or moist and cold. Is there a nasal discharge? The mucous membranes of the eyes, nose, and mouth next command attention. Are they anemic, congested, cynotic, icteric? They give us a clue to the circulatory changes in the body. For example muddy brick red mucous membrane denotes toxic absorption from the intestinal tract. While examining the eyes test for blindness. There may be

*Presented at the 35th Annual meeting of the Missouri Valley Veterinary Association, Kansas City, Nov. 20-22, 1928.

amaurosis (blindness without visible lesion) present. Notice the cornea. Are ulcers present? If so, are they indicative of avitamosis or kidney disturbance? If desirable stain the cornea with eosin or fluorescein solution to better view the lesions. How are the pupils? Do they react to light? Is there a lachrymal discharge? Look for evidence of entropion (inversion of eyelid). The dog has no lower eyelashes. Follicular conjunctivitis is also common. Lachrymal fistula if present is usually due to disease of the fourth molar tooth.

We next pass to the ears. How are they carried? If one is diseased the head will be twisted with the affected ear down. In fighting breeds, coon hounds in particular, scars and torn flaps are often encountered. Constant shaking of the head and scratching at the ears indicate ear trouble. Examine for wood ticks, undue amount of secretions, and offensive odor. Palpate the base of the ear and listen for suction sounds. A dark secretion in the ear usually indicates the presence of the otodectic mange mite. Are the ears sensitive to examination? An otoscope facilitates the examination of the ear. Local anesthesia may also be desirable in certain cases.

Working backwards we palpate the neck and throat region. Are the thyroid and cervical lymph glands enlarged? Following down the back and tail we have briefly covered the entire skin and noticed the hair coat for dryness, softness, pliability, and elasticity. Are fleas, lice, eczema, mange, or ringworm spots in evidence? Detailed examination of any suspicious area is necessary and if found the owner's attention should be called to it, as it prevents complications should the disease progress while the animal is in your care.

Ordinarily the temperature, normally ranging from 100 to 102.5 deg. F., is next taken and while holding the thermometer we notice the anal pouches, the region around the rectum. Are tapeworm segments seen in the hair? At the same time, with the other hand, take the pulse beat at the femoral artery. The pulse varies from 70 to 140 per minute, depending on the age and size of the dog. A more accurate determination of the heart action can be taken from the heart itself by palpation and auscultation over the region of the 5th and 6th ribs.

Returning to the head we proceed to check the digestive system by opening the mouth, examining the lips, teeth, tongue, odor from breath. Are foreign bodies, cysts, tumors, etc., in evidence? Look at the tonsils and pharynx. Palpate from the throat region.

Ringworm on French Bull. The owner contracted the disease from this animal.

Pass backwards to the abdomen. Examine its contour. Palpate by gentle steady pressure and locate the kidneys, and intestines. If the stomach and uterus is distended they can be felt. The liver can be made out on both sides and in some dogs the spleen can be felt on the left side. Laparotomy, if necessary, will give a positive diagnosis of abdominal disturbance.

The frequency of respiration in the dog

ranges from 10 to 32 per minute. Observe the rhythm and type. Is it forced, shallow, etc.? A dog having dyspnea usually puffs his cheeks with each expiration. Compression of the larynx and trachea will induce coughing, if inflammation is present. Auscultation and percussion will reveal abnormality in the lungs.

A clinical examination of the nervous system is difficult and extensive, so that ordinarily we observe any symptoms referring to central nervous disturbance and interpret them as such, or if indicative of peripheral nervous character such as paralysis of a part we treat accordingly, depending upon a detailed examination of all nervous symptoms to determine the cause. The muscular and osseous systems are

Squamous Follicular Mange. Note Characteristic lesions above the eye. This is a common type and responds well to early treatment.

checked by palpation, special attention being given to joints for indications of rickets, dislocations, or arthritis.

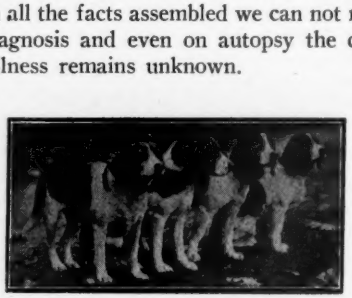
The genito-urinary systems are covered by palpation. Examining the kidneys there is likelihood of mistaking them, especially the left one, for a foreign body, as it hangs low and is movable. Compress the bladder. Rectal palpation, with a finger cot in the larger breeds, allows us to palpate the prostate gland in the male. The dog as you know has no seminal vesicles. The external genitalia are examined, looking in the female for vaginal discharge, evidence of estrum, vaginal cysts, infectious genital tumors, malignant growths on the mammary glands. In the male we look for infectious genital tumors, discharge from sheath, calculi at the posterior end of the penal bone, hernia, monorchism, etc.

After covering the entire animal with our

Hound with scattered areas of squamous type of Follicular Mange.

general examination, we might desire special information, such as fluoroscope picture, an x-ray plate, a blood smear, a urine analysis, or skin scraping or puncture of a swelling. The examination of the feces is so important that it is included in every examination.

Such routine examination sounds elaborate, but it really takes little time to go through it after you have become accustomed to it. In most cases it will give plenty of evidence upon which to arrive at a correct diagnosis. There are some cases in which with all the facts assembled we can not make a diagnosis and even on autopsy the cause of illness remains unknown.



Microscopic Examination of Feces and Skin

By H. J. MILKS, Ithaca, New York

THE microscopic examination of the feces and of the skin for the detection of parasites is so important and simple that everyone contemplating small animal work should familiarize himself with it. Great progress has been made in veterinary parasitology and it is necessary for the practitioner to keep up with the pro-

Boston with Pustular type of Follicular Mange.

cession or our progress will not amount to much. No one should be satisfied by looking at an animal and guessing that it has worms. He should be able to find out whether or not it is infested and if infested the kind of infestation.

Without the microscope there is much guess work in diagnosing skin diseases. Squamous eczema, dry seborrhea and sarcoptic mange, for instance, are not easily differentiated from the squamous form of follicular mange and a slip up may be serious. Without such a routine examination, the small circumscribed areas of follicular mange appear so inoffensive that many would be missed. It has been stated that the more one uses a microscope in the examination of skin diseases, the less he needs it. This, of course, is so just as it is also true that if we could have numerous cases of any disease pointed out to us by one we had confidence in and were told by him what the trouble was, we should be able to recognize it in the future. The microscope teaches in just that way and yet the result of a routine scraping examination frequently surprises us.

Many of the laity know about the microscopic work and are better satisfied if such an examination is made. However, it is not just the impression a microscope makes, but the positiveness of the results of the examination that is important.

The microscopic examination is not infallible and the accuracy depends upon the one making the examination and the care he takes in it. In certain instances one should not discard all that he has learned

Abdomen of Boston Terrier with the pustular type of Follicular Mange.

from the history, symptoms and examination of the patient for a negative microscopic examination. The sarcoptic mite of the dog is hard to find and in many instances we do not hesitate to diagnose a case as sarcoptic mange if we have the right history, and the

symptoms that go with the disease, in the face of a negative examination. Follicular mange is so easily found that the liability of failure to find the mites is not great.

Equipment necessary. A good low-powered instrument is necessary for accurate work. The cheap microscopes with small lenses will never be satisfactory to the person who has ever been familiar with a laboratory instrument. The 10X ocular and two-thirds or 16 mm objective give all the magnification needed. The higher-powered dry lenses are almost useless, and the oil emersion nonsensical for this class of work. The higher powers would be necessary if we wished to study the fine details but in this work, we just want to find what we can and to do it quickly. A mechanical stage is very useful. Glass slides are of course necessary equipment. Cover-glass may be used or not. In the coarse work we do not use a cover.

Mongrel Puppy with Ringworm.

Directions for Examination for Skin Parasites

1. Pick out a promising or typical appearing place and scrape with a sharp knife in one direction until the part oozes quite well. The point is to get deep enough. Superficial scraping will not do. As a result of the scraping you will have a considerable amount of material on the side of your knife next to the edge.

2. Wipe the scraping off on a clean slide and work over to the center. Place a drop or two of 10% caustic soda or caustic potash on the scraping; tease the scraping apart and mix with the caustic.

3. Heat over a match or other flame to boiling point. Remove from flame, distribute evenly over a place about three-fourths inch in diameter and if dry add a drop of water or caustic solution. (You cannot do anything with a dry specimen).

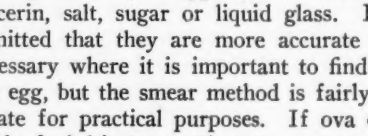
3. Examine with low power without a cover glass. If fine details are desired cover and use high dry power. For routine, however, we are not after details. As stated previously our object is to find the parasite as quickly as possible.

Directions for Fecal Examination

1. Make a thin smear of feces over the center of the glass about three-quarters of an inch square.

2. Add a drop or two of water, saline solution or alkali solution and examine under low power without cover. We do not use covers for this rough work. They just mean so much more to handle. An alkaline solution (10% caustic soda or caustic potash) is not necessary but aids by dissolving the mucous and clearing the slide.

There are many much more complicated ways of making a fecal examination but they require special sieves; centrifuges and other equipment. They all depend upon sedimenting the ova to the bottom of the tube or floating them in a hypertonic solution of glycerin, salt, sugar or liquid glass. It is admitted that they are more accurate and necessary where it is important to find the last egg, but the smear method is fairly accurate for practical purposes. If ova cannot be found in two or three smear preparations, it is not likely that there are enough worms present to do any great harm to the animal.



Treatment for Parasites of Dogs*

By BENJAMIN SCHWARTZ, Washington, D. C.,
Senior Zoologist, Bureau of Animal Industry, U. S. Department of Agriculture

External Parasites

IMPORTANT external parasites of dogs include three species of mange mites, sucking and biting lice, four species of fleas, chiggers and ticks.

Sarcoptic Mange—Canine sarcoptic mange, due to a mite known as *Sarcoptes scabiei canis*, is characterized first by the appearance of red points on the skin which soon transform into papules or vesicles. These lesions are most easily seen on the abdomen and other parts of the body where the skin is thin and unpigmented. As the mites burrow into the skin a serum exudate is formed and it is the dried up serum which produces the characteristic scab. Owing to intense itching the affected animal scratches and rubs off the scabs thus producing open sores which may become infected with bacteria.

Treatment for sarcoptic mange consists in good nursing, fresh air, exercise and medicinal applications designed to kill the parasites. The following applications are recommended:

No. 1—
Oil of tar ..... ℥II
Green soap ..... ℥II
Alcohol ..... ℥XII

No. 2—
Oil of tar ..... ℥II
Crude petroleum ..... ℥II
Liquid petrolatum ..... ℥XII

No. 3—
Cresol liniment (consisting of 2 parts liquor cresolis, 1 part of soft soap and 1 part of alcohol) ..... ℥Iss
Sublimed sulphur ..... ℥III
Oil of tar ..... ℥Iss
Potassium carbonate ..... ℥Iss
Adeps ..... ℥XI

No. 4—
Lime and sulphur dip.

Ear mange—Ear mange in dogs, produced by the ear mange mite, *Otodectes cynotes*, is characterized by itching of the ears which causes the affected animal to scratch and rub the ears and shake the head, these activities giving rise to sores and bleeding, and occasionally to nervous spasms, such as traveling in a circle, epileptiform fits and other nervous disturbances. The ear canal becomes filled with detritus which consist of more or less modified earwax and inflammatory products such as scales.

Treatment of this condition consists in swabbing the external auditory canal with a cotton swab soaked in one of the following preparations:

1. A 1% carbolic acid or creosote in glycerin.
2. A 5% carbolic acid in olive oil or castor oil.

Hound with Pustular type of Follicular Mange. Note the thickening and wrinkling of skin on the face and swelling of the lower legs and feet.

3. One part of carbon tetrachlorid in three parts of castor oil.
4. One part of chloroform in nine parts of olive oil or castor oil.

*For more detailed information concerning parasites of dogs, including treatment and prevention, the reader is referred to Circular 338, U. S. Department of Agriculture, entitled: "Parasites and parasitic diseases of dogs," by M. C. Hall.

The treatment should be repeated daily until the animal is cured. For more details as to treatment see the discussion on ottorrhea in this issue.

Demodectic mange—Demodectic mange in dogs, caused by a mite, *Demodex canis,* is characterized at first by the appearance of reddish, hairless spots on the skin which become more extensive and redder as the disease progresses, and these denuded areas usually become infected with pus-forming bacteria resulting in the production of ab-

Sarcoptic Mange in Cat.

scesses and pus pockets. The disease usually runs a slow course, and may last for months and sometimes up to two years or longer.

The treatment of demodectic mange in dogs is a long, costly and tedious procedure. Despite very careful treatment a cure is not always effected. The disease responds more readily to treatment in depilatory and localized cases than in advanced cases in which the condition has become generalized and pustules have been formed. The following lines of treatment have been recommended with results which have not, however, been uniformly successful:

1. Oil of tar.
2. An ointment consisting of liquid phenol, one part, camphor, 2 parts, and white petrolatum, 6 parts.
3. Lassar's paste which is salicylic acid, 2 parts, starch, 24 parts, zinc oxide, 24 parts, and white petrolatum, 50 parts.
4. A 1% to 5% formaldehyd solution.
5. A mixture consisting of kerosene 8 ounces, raw linseed oil, 8 ounces, carbolic acid one ounce and sulphur ¼ lb.

In connection with these medicinal applications good nursing should be employed.

Lice.—Dogs are commonly infested with sucking lice, *Linognathus piliferus,* and with biting lice, *Trichodectes canis.* The former feed on serum and blood and the latter feed on scales and superficial portions of the skin, both species producing intense itching and irritation in cases of heavy infestations.

Lousy dogs may be treated by dipping three times at intervals of eight to ten days in one of the coal tar creosote dips. As a substitute for dippings, oils, such as castor oil, olive oil, cottonseed oil may be rubbed into the skin and left for several hours before being washed off with warm water and soap. Powders such as pyrethrum powder, derris powder, and powders containing insecticides such as naphthalene, sulphur and tobacco, may be used as palliative treatments, and should be repeated a number of times.

Fleas—Four species of fleas occur on dogs in the United States. These are the dog flea, *Ctenocephalus canis,* the closely related cat flea, *Ctenocephalus felis,* the human flea, *Pulex irritans,* and the sticktight flea, *Echidnophaga gallinacea.* Fleas cause considerable irritation and itching, and act as a drain on the nervous energy. The dog and cat fleas as well as the biting louse of the dog act as intermediate hosts of the double-pored dog tapeworm, and the destruction of fleas on dogs is a preventive measure against these internal parasites.

The coal tar creosote dips recommended for the destruction of lice will also destroy fleas. Pyrethrum powder, derris and naphthalene are also destructive to fleas.

Chiggers—The common American chigger, *Trombicula irritans,* produces intense itching and causes affected animals to scratch and rub themselves and this results in the production of sores.

Affected dogs may be treated with sulphur ointment, repeated applications of alcohol or they may be dipped in, or washed with coal tar creosote dips.

Ticks—Various species of ticks infest dogs. The more important species being the

wood tick, *Dermacentor variabilis,* and the brown dog tick, *Rhipicephalus sanguinus.*

In addition to the mechanical removal of ticks by hand, coal tar creosote dips may be used when the infestation is heavy.

Internal Parasites

The more important internal parasites of dogs include two species of roundworms, hookworms, whipworms, and various species of tapeworms.

Roundworms—The large intestinal roundworms of dogs, *Toxocara canis* (synonym *Belascaris marginata*) and *Toxascaris leonina,* are especially injurious to pups, producing digestive disturbances, stoppage of the bowels when the worms are present in large numbers, derangement of appetite, and emaciation which may terminate fatally. The young worms invade the liver and lungs, and pups may die from pneumonia produced by the presence of the immature worms in the lungs.

Roundworms may be removed from dogs by the administration of oil of chenopodium in hard or soft gelatine capsules at a dose rate of 1 cc. for a dog weighing 22 pounds. This treatment should be immediately preceded or followed by one ounce of castor oil. Carbon tetrachlorid, at the dose rate for hookworms, is also effective in removing roundworms, and is moreover a safer treatment than oil of chenopodium.

Hookworms—The common dog hookworm in the United States is *Ancylostoma caninum.* A related species, *Ancylostoma braziliense* occurs in certain parts of the south, especially in Florida, and is of importance in human medicine because the larvae of this parasite produce a dermatitis in man generally known as creeping eruption. A third species of hookworm, *Uncinaria stenocephala,* occurs in foxes but is rare in dogs in this country.

Hookworms are blood suckers and apparently secrete a toxic substance which exerts an injurious action on the blood. In addition to the impoverished condition of the blood resulting from hookworm infestation, dogs harboring hookworms, show digestive disturbances, become weak and emaciated, have a foul breath, unthrifty coat and sunken eyes, and show other symptoms commonly associated with parasitism. Pups commonly succumb to hookworm disease.

Treatment for the removal of hookworms as determined by the extensive investigations of Hall and his collaborators consists in administering tetrachlorethylene in hard capsules at a dose rate of 2 cc. for a 22-pound dog. Carbon tetrachlorid at a dose rate of 3 cc. for a 22-pound dog, is also an effective treatment for the removal of hookworms but is somewhat inferior to tetrachlorethylene so far as concerns safety and efficacy.

Whipworms—Whipworms, *Trichuris vulpis,* are common parasites of dogs and give rise to a low grade inflammation at points where they attach at the tip of the cecum. These parasites are rather difficult to remove owing to their location. The most satisfactory treatment consists in daily administration for one week of equal amounts of santonin and calomel in doses of ¼ grain each, according to the size of the dog. This treatment is suspended for a week and repeated.

Tapeworms—Dogs are infested with various species of tapeworms representing several genera including *Taenia, Dipylidium, Echinococcus* and *Diphyllobothrium.* The double-pored tapeworm, *Dipylidium caninum,* and related species probably are the most common tapeworms of dogs in the United States, *Taenia pisiformis* being next in frequency of occurrence.

Tapeworms produce digestive disturbances of various sorts and well-marked nervous disturbances which, in some cases, simulate rabies. The passage of gravid segments causes anal itching and irritation, symptoms which are commonly associated with pinworm infestation in various animals.

There are several drugs for the removal of tapeworms, namely oleoresin of male fern, kamala, freshly ground areca nut and arecolin hydrobromid. The latter treatment is convenient and fairly effective and should be given in the morning after food has been withheld overnight, in doses of ⅛ grain to small dogs, ¼ grain to medium-sized dogs and ½ grain to large dogs.

Notes on the Treatment of Skin Diseases in Small Animals

By H. J. MILKS, Ithaca, New York

THE main principles involved in the treatment of skin diseases do not differ materially from those which are used in combatting diseases of other organs. In the first place it is necessary to make a correct diagnosis except in those acute minor conditions which often heal in spite of mismanagement in treating them. It has been well stated that three things are necessary to make a diagnosis of skin affections; a good eye, a good light and a good microscope. Simply naming the disease does not complete the examination. One should, so far as possible, consider the etiology and pathology before deciding on the treatment. Unfortunately these are often obscure and one must base his treatment on practical experience.

There is no need to let a disease run, nor danger in curing too quickly. There are some of the laity who believe that it is necessary to let the poison escape but this theory dates back to the early days of medicine and is obsolete. It is quite comparable to the old idea of putting a rowel in a horse and then watching the poison (pus) escape from the body. Ordinarily our difficulty is to cure quickly enough.

Internal and External Treatment

There are, in general, two ways in which skin diseases may be treated, internal or constitutional and external or local. There is some controversy relative to the value of constitutional treatment. There was a time when this was considered the most important but it has been quite largely displaced by those specialists who believe that skin diseases are purely local and have no relationship to the general organism and consequently are to be handled by local applications. This was the German view and is still held by them to a greater or lesser extent. Now most authorities take a middle position.

In general it may be said that there is no known internal treatment that is indicated in every case of skin disease. The parasitic diseases are entirely local and constitutional treatment aside from general supportive measures are of no great use. Personally I feel that the middle ground may be the best. The skin is an organ and there is no more reason why this cannot be diseased than is the case of the heart or any other organ. On the other hand there are numerous cases where a combination of general and local treatments are valuable.

Local Treatment

Water. Water is used to remove dirt and accumulations of disease products. In acute inflammations it is not good and its use should be restricted to its importance in cleanliness. In circumscribed conditions it is much better to cleanse the parts with oil, boric acid solution, cold cream or vaseline.

Soap. Soap is also detrimental in acute diseases but as in the case of water must sometimes be used to clean up. When necessary to use soap in these conditions always employ one as mild as possible, or rather one without free alkali. In chronic conditions soaps are often valuable. A good strong alkaline soap may be irritant enough to supply just the stimulation needed.

Dusting powders. The use of these agents is pretty well restricted to certain forms of eczema and erythema. They may be represented by zinc oxid and carbonate, rice flour, starch, talcum, lycopodium, tannic acid and many other antiseptic powders. Tannic acid and other astringent powders are often exceedingly useful on moist surfaces.

Lotions. The lotions generally used leave a deposit on drying. They are of much

service in treating some eczemas, erythema, urticaria, etc. If found too drying a little glycerin (5 to 10 minims to the ounce) may be added. The following are representative: calamine lotion, or solution; calamine and zinc oxide each one to four drams; lime water and olive oil of each two ounces, or if more drying is desired water or lime water may replace the oil. Phenol may be added in small amounts if pruritus is great. Boric acid solution 5 to 15 grains to the ounce and black and yellow wash are also representative of this group. Alcoholic solution of tannic and salicylic acids, 5% of each is very valuable to dry up moist eczema. It smarts but this soon passes off. Dogs rarely lick the parts to which this has been applied and of course this is important.

Ear Mange in Rabbit. Note the large accumulations of Crusts in the Ear.

Ointments. Ointments are usually thought of in connection with skin disease. Their selection should depend upon the nature of the lesion. The soothing ones are represented by zinc oxide and boric acid ointments and the stimulating ones by those containing tar, cade, chrysarobin, etc. The soothing ones are indicated in acute conditions and the stimulating ones in chronic. In general, tar and its substitutes, cade, etc., are useful for their stimulating effect in chronic conditions but are contra-indicated in acute ailments. The rule is the more chronic the condition the stronger the indication for the tarry preparations. There are many ointments and many of them for certain purposes, salicylic acid ointment 5 to 10% is

Many compound ointments are on the market. They have many uses but their useful in thickened skins, ringworm, etc. composition and not the recommendations on the label should determine their use in skin diseases. In general ointments do not serve well in moist skin lesions because water and fat do not mix and therefore fats cannot serve well as carriers of other remedies in these cases. For ease of removal an ointment base of an animal fat is superior to petrolatum although the latter makes a much better appearing preparation.

It has been our custom, as with most others, when necessary to apply a greasy preparation over large surfaces as in mange and some eczemas to use an oil instead of a solid fat because it is more readily applied. This preparation is made in about the same proportion as an ointment and we employ vegetable or animal oils because they saponify much more readily than mineral oils and therefore are removed more easily.

Sarcoptic Mange in Ferret. This is often called Foot Rot.

Antipruritics. These include phenol, menthol, boric acid, resorcin, menthol, weak solutions of borax, and sodium bicarbonate. They may be added to lotions or ointments for this purpose.

Antiseptics and parasiticides. Fortunately most of either of these groups can be included in the other. The number is so great and well known that it seems unnecessary to outline them, since the treatment of parasitic diseases is discussed elsewhere in this issue.

Constitutional

This is directed not so much at the malady as at the condition of the patient, or as it might be put, as we would treat the case if there were no skin lesion. The skin is one of the eliminating organs of the body and when badly diseased must be compensated for by other methods of elimination particularly by the bowels and kidneys. Conversely if the kidneys or bowels are sluggish the skin may be forced to increased activity, therefore it happens frequently that diuretics and purgatives take this burden off the skin and often aid in the treatment of inflammatory disease, but this does not mean that such treatment is all that is necessary.

Improvement of Faulty Hygienic Conditions

It is unnecessary to point to the advantages of sunlight, air and exercise. All gastro-intestinal disorders should be corrected and the diet considered. The diet is hard to manage. Most animals do not have enough meat and it is a problem to get it. Contrary to the usual experience we have seen the skin "set afire" with beef but this is unusual. The usual procedure is to cut down the carbohydrates, sugars, starch and fats and to substitute vegetables. Unless one is very proficient in the composition of food stuffs he is apt to eliminate one food and allow another that is as bad or worse.

Tonics. These may be used as indicated and not as a routine. In anemic conditions, iron, liver, quinin and strychnin are often used, but the quinin is usually wasted since the combination is administered in coated tablets and does not serve as bitters. The strychnin, however, is a general tonic. The digestive ferments are sometimes employed but their value is doubtful. There should be no routine practice in the use of these remedies. Not all cases need tonics and it is not possible to make one cover all conditions.

Laxatives. These are particularly useful in inflammatory conditions. Their purpose is to eliminate toxic substances. The saline cathartics are preferred but these do not seem to produce the remarkable action in dogs that they do in man. Furthermore they are hard to give and after being given may be vomited. The usual dose is enough to move the bowels without causing severe purgation. The vegetable purgatives, cascara, etc., may be substituted. Castor oil is not so useful except to flush out the tract at the beginning of treatment. This drug cleans very clean and by the time more material has accumulated the animal is liable to be constipated again. Intestinal antiseptics such as salol, the phenolsulphonates, and small doses of milk of magnesia may be useful in certain instances where it is evident that the trouble is digestive as in urticaria and some eczemas.

Diuretics. As pointed out previously these may be useful in some cases but just because they sometimes cure there is no reason to believe that diuretics will cure all skin diseases. The saline diuretics, potassium citrate, acetate and bicarbonate are most often used in skin trouble but the vegetable diuretics may also be used. The animal should be provided with plenty of water as this alone flushes the kidneys and serves as a diuretic.

Alteratives. The chief alteratives are the mercurials, arsenic and iodin. The use of the mercurials and iodides in skin diseases in human medicine probably came from their specific action in certain forms of syphilis in which they serve as antiseptics directly attacking the cause of the disorder but we have no such specific indication in veterinary medicine. Arsenic deserves special mention. This drug should be classed as a skin stimulant. Arsenic has been much overused and is still overused. To some the first reflex in the case of a skin disease was and is to administer arsenic. This practice has resulted in a good deal of harm and there has been a tendency to go the other way. According to most authorities arsenic is indicated in sluggish skin diseases of the epithelial layers, particularly in chronic dry eczemas. In acute inflammatory skin diseases it is contraindicated.

To sum up: constitutional remedies are often useful but no routine can be depended upon in all cases. It is necessary to study each patient and to do what it seems necessary to do at any particular time.

Moist Eczema in the Dog

By R. E. NICHOLS, Ithaca, New York

MOIST eczema is an acute inflammation of the superficial layers of the skin, characterized by a sticky, purulent exudate covering a highly inflamed area. This affliction may be found in circumscribed areas on the back and neck, or it may be diffuse and include a large surface of the body.

From a clinical point of view, moist eczema is an inflammation of the skin in which there is a fluid discharge.

Symptoms

Nearly all breeds of dogs are affected by this disease, but the condition is seen most often in long haired dogs such as collies, old English sheep dogs, and the wire haired breeds. In these long haired dogs, the hair will be matted down over the sore forming a false scab which is dry and hard. When these scabs are removed a highly inflamed moist and purulent area will be seen.

Upon examination a sticky, purulent exudate is found covering an inflamed area. Manipulation of the parts causes pain. Considerable itching is manifested by the patient. As previously stated, in long haired dogs a matted dry hariy scab may be seen.

Treatment

The treatment consists in first clipping the hair from the affected parts. Then the area should be cleansed of the prevailing exudate by washing either with a boric acid or a chlorazene solution.

This type of disease heals under a scab or, in other words, is first dried up and converted into a crusty form. The first line of treatment is to clean up and apply drugs which are absorptive and astringent in nature. Ointments are of no value because they do not adhere to the moist surface. Preparations made from tars and oils but tend to aggravate the condition. Hygroscopic powders such as talc may be used; one may use either the vegetable astringents such as tannic acid or the mineral astringents such as the lead, zinc, or silver salts. We have employed more solutions than powders. Our experience has caused us to use a solution of 5 per cent each of tannic and salicylic acids in alcohol.

When the lesion is converted into the crusty form, the scabs may be rubbed off with greasy and soothing substances. Zinc oxid ointment works very well.

At this stage I would like to mention a clinical case we had recently. The patient was a two-year-old German shepherd dog. Three months ago this dog had been suffering from a dry form of eczema on the back. This condition was treated with a sulphur and tar preparation and the dog responded well. When the moist condition broke out the owner, thinking it the same kind of a disease, used this sulphur and tar preparation. It greatly aggravated the sore, causing it to spread and cover a large area from the neck to the middle of the back. When the animal was brought into the clinic the hair was clipped down close to the body and the area thoroughly cleansed with a solution of chlorin. After drying with cotton, a solution of 5 per cent tannic and salicylic acids in alcohol was daubed on with a piece of cotton. The following day the process was repeated and improvement noted. On the third day after treatment dry scabs were forming over the entire surface. On the fourth day, the acid treatment was discontinued and zinc oxid ointment was applied in order to loosen up the scabs and soothe the skin. Again on the fifth day the zinc oxid ointment was used and the scabs had become so loose that they were all removed. The animal left the clinic the next day entirely healed.

Otorrhea of Dogs and Cats

By H. C. STEPHENSON, Ithaca, New York,
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OTORRHEA is the term used to designate an inflammation of the external ear. The common name is canker. Clinically we distinguish three kinds or types. They are catarrhal, the parasitic and that type, otorrhea ceruminosa, due to excess formation of cerumen or wax.

Otorrhea is of rather frequent occurrence, probably much more frequent than clinical records will show. That 5% of dogs and cats are affected is probably a very low estimate. The parasitic type will comprise about two-thirds of the cases.

Parasitic Otorrhea

Parasitic otorrhea is an inflammation of the external ear due to the presence and activity of a mange mite. The parasite is called *Otodectes cynotis*. The condition has had a number of names, based upon the various names that have been given to the parasite and also upon the symptoms produced.

Symptoms. Itching is the most prominent symptom. The itching is intense. It results in scratching of the ear by the hind foot, rubbing the ear on the floor or ground and, many times, quite vigorous shaking of the head. The shaking of the head is often induced by the dog moving about or by being kept in a warm place. Examination of the ear brings on itching. The irritation is produced by the movements of the parasite within the external ear. The mite lives on the scales and secretions present and does not burrow into the skin as does the sarcoptic mite. The discharge caused by this parasite is of a dark chocolate-brown waxy consistency. The presence of such a discharge along with the itching is considered diagnostic, whether or not the parasite can be demonstrated at the time of examination.

The otodectes parasites are rather large for mange mites, being visible to the naked eye in many cases. A small hand lens may be very helpful in finding the mites in the discharges cleaned from the ear. One simple procedure is to place the discharges on a piece of paper in sunlight or in a warm place. Within a short time, if parasites are present, they may be seen crawling around on the paper.

Treatment. Treatment consists of the destruction and removal of the parasite. Cleaning of the ear removes the greater portion of the parasites and paves the way for the destruction of the young mites as they hatch out. Thorough cleaning of the ear of all wax and discharges is probably the most important part of any treatment of this condition. The introduction of antiseptics or parasiticides into the ear is the next logical step. The purpose in their use is to destroy any remaining parasites and also to destroy the young parasites as they hatch out. In a few cases special procedures to allay the irritation become necessary.

Many different preparations have been employed in the treatment of parasitic otorrhea. Herms lists sulphur ointment, 10% tincture of iodin in glycerin, and 1% phenol in linseed oil. Hall recommends 8 parts of carbontetrachlorid in 3 parts of castor oil. Brumley uses liquid petrolatum alone or with 5% phenol added. In addition to the above Berge has used 1 part each of betanapthol and ether in 20 parts of petrolatum, to which is added 1% phenol, 0.5% cresol and 5% phenol. Hutyra and Marek list equal parts of balsam of peru and glycerin, 10% oil of caraway in olive oil, and a mixture of napthol 10 parts, ether 30 parts and olive oil 100 parts. Nocard as well as Sewell has used 1 part of mercuric nitrate ointment (citrine ointment) in 4 parts of olive oil.

The above list of preparations used in this condition is by no means complete. Each clinician seems to have his own particular

parasiticide mixture that he has developed for the treatment of this disease. We have used a number of the above or similar ones and think them all of value. We have also used a mixture of 20 parts phenol, 40 parts camphor, and 40 parts of liquid petrolatum, especially in those cases where the itching was intense. Bichlorid of mercury either in aqueous or alcoholic solution has also been recommended.

Thorough but careful cleaning of the ear is done daily for four or five days and then every two or three days. Care should be taken not to injure the ear or treat too frequently, after the first few days, in order not to set up a catarrhal condition.

It is interesting to note that most of the preparation used in the treatment of parasitic otorrhea have an oily base. The oil is useful not only in bringing the parasiticides into contact with the parasites but also in softening the discharges so that they can be more readily removed. The oils alone may be useful in destroying these parasites, because their respiration is entirely cutaneous and the oils tend to produce suffocation. In those cases in which the itching is severe, those preparations which contain anesthetics or have anesthetic properties will be found very useful.

Sequellae—Convulsions, catarrhal otorrhea, wounds of the ear flap and hematomas of the ear flap are among the sequellae of parasitic otorrhea. The last three might even be considered as symptoms of the condition because in many cases they are the result of this condition.

Whenever there is a sore on the ear flap an examination of the ear canal should be made. If the sore has not been caused by shaking of the head healing may be delayed greatly if there is a parasitic otorrhea present. It is extremely difficult if not nearly impossible to heal a sore on the ear flap if a dog continually shakes his head.

Rarely is a hematoma of the ear flap caused by anything other than the dog shaking his head and breaking a bloodvessel in the ear flap. At the same time that the hematoma is treated the parasitic otorrhea, if present, should be attended to.

In all cases of convulsions, either in the cat or dog, where the cause has not already been definitely determined, the ear should be examined. Megnin and Nocard first showed the relationship of this condition to convulsions. They described a number of cases where hunting dogs had epileptiform convulsions after being in the field for awhile, and that the trouble was caused by ear parasites. We have had a number of cases of convulsions in both cats and dogs in which a parasitic otorrhea existed and which were relieved when the ears were cleaned up.

Catarrhal Otorrhea

Catarrhal otorrhea is very similar to the moist eczemas of the skin that are found on other parts of the body. In this condition there is a continual discharge of purulent material from the ear. It is caused by infection. This infection may be present because of the irritation or damage done by parasitic otorrhea. The accumulation of dirt, the presence of foreign bodies, the breaking down of tumors, distemper and excess moisture are also among the causes of this condition.

Symptoms—If only one ear is affected the dog usually holds the head sideways with the diseased ear down. There is some itching. The condition is painful, and, because of this, scratching and rubbing is done very carefully. Manipulation of the ear results in pain and also gives a squashy sound. The exudate from the ear is thick, yellowish, purulent and sometimes streaked with blood. The parts of the ear which come in contact with the discharges are inflamed and quite tender.

Treatment—Before any particular application of drugs is tried the discharges must be removed as completely as possible. This can be done either with dry pledgets of cotton or by washing with various solutions. The solutions commonly used are soap and water, ether, boric acid solution and chlorin solutions. The ear should be dried after cleaning. Cleaning of the ear is the most important part of treating these cases. Success depends for the most part upon the

thoroughness with which it is done. The operator should stand behind the dog's head so that in using the cotton applicator the bottom of the ear canal can more easily be reached. An otoscope to examine the ear canal with is valuable but not an essential.

Medication may be antiseptic, astringent, or drying and absorptive, or a combination of all three. Occasionally it is necessary to apply a local anesthetic, one which acts well as a surface anesthetic. Of the antiseptic solutions the following are frequently used and found valuable in controlling the infection: 1% chlorin solutions, as chlorazene; alcoholic and aqueous bichlorid solutions: 2% mercurochrome solutions; metaphen solutions. Many of the astringent solutions are also antiseptic as 5% each of salicylic and tannic acids in alcohol and 5% silver nitrate solution. Practically every dusting powder is of use in this condition as they tend to dry up the secretions. The application of a mild ointment, such as zinc oxid ointment, is of considerable value in protecting those parts not already affected by the condition.

No two cases of catarrhal otorrhea can be treated exactly alike. The form of treatment that seems best in one case may prove a failure in the next. The general principle of using astringent or drying drugs should be adhered to, but frequently the treatment used must be changed a number of times during the handling of a particular case.

Otorrhea Ceruminosa

Otorrhea ceruminosa is due to an excess of cerumen or wax formation. The cause is probably unknown. The symptoms are itching and the presence of an excess of yellowish wax. The wax may be very soft and pasty. Many cases do not recover rapidly and the condition may last for years with intermittent periods of relief. The treatment consists in cleaning the ear and applying those drugs which seem to have a tendency to lessen secretions from the skin. These are salicylic acid, resorcinol and tannic acid. Powdered boric acid and alum powders may have a similar effect. Five % each of tannic and salicylic acids in alcohol, 1% resorcinol in alcohol, and 7% salicylic acid with 3% glycerin in alcohol are

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PANNUS IN A SHEPHERD

Case number 108623, a three-year-old, black and white male shepherd. For about ten days the owner had noticed a grayish appearance to the dog's eyes. He thought that there was a film over the dog's eyes.

There was a grayish rough membrane, shaped like a half-moon, covering the inner and lower portion of each cornea. About one-third of each cornea was affected. Fine blood vessels could be seen, by reflected light, in this membrane over the surface of the cornea, which was rough. There was only slight conjunctivitis. The condition was diagnosed as pannus.

For five days one-sixteenth grain of dionin (ethylmorphin hydrochlorid) was powdered, divided into two portions, and sifted onto each cornea. The reaction for the first three days was pronounced but on the fourth and fifth days decreased considerably. From the sixth to the tenth day, after washing the eye with boric acid solution, 5% yellow oxid of mercury ointment was applied under the lids, and the eyes massaged. From the eleventh to the fourteenth day, dionin was used.

There was very little change in the appearance of the eyes until after about seven days of treatment. Progress was noted at that time and it continued until the case was discharged. The eye became shiny; the roughened surface of the cornea became smoother; the fine blood vessels disappeared. When discharged, on the fourteenth day, the corneas were smooth but there was still a very slight bluish sheen to the inner and lower portions of each cornea.

The results in the treatment of pannus are usually discouraging. Recurrence is almost the rule. The case above described was an exception in that the eyes improved so rapidly. In some cases the growth is so thick as to make curetting of the surface necessary. Rarely is a complete recovery brought about in such cases.—

Ithaca, N. Y. H. C. Stephenson.

Chronic Obstruction of the Bowels—Constipation

By H. J. MILKS, Ithaca, New York

CONSTIPATION is probably seen more frequently in dogs than in any other of our domestic animals. It usually takes the form of diminished peristalsis (lack of tone) or mechanical obstruction which interferes with the passage of the feces. In some animals there seems to be a predisposition to it. The chief causes are:

1. Food difficult of digestion, especially too abundant feeding of bones, bread, dog biscuit and dry food. In these instances the animal is as much to blame as is the food, perhaps more since but an occasional dog will be troubled on any particular food. I know of cases that were invariably bound up if allowed to eat any quantity of bones, and yet most dogs handle them well.

2. Lack of exercise in dogs kept in the house or tied up.

3. Old age. Old age seems to predispose a dog to constipation. Whether or not it is due, as claimed by some, to atrophy on the intestinal mucous membrane and the muscular coats of the intestine, is not easy to determine. For practical purposes it is enough to know that old age is a factor.

4. Mechanical obstructions. These may be foreign bodies, an accumulation of feces containing much bony refuse; stenosis from tumors or otherwise, particularly that of tumor of the prostate. These tumors appear to be poorly attached and are pushed back in the pelvis when the animal strains to defecate. Piles, tumefied anal glands, dilations and diverticuli of the rectum and obstruction from the outside by matted hair (false constipation), constriction of the anus and rectum or abscess in the perineal region, are also factors.

Symptoms. The chief symptom is an absence of the passage of feces. The dog makes almost constant, violent efforts to defecate and is either unsuccessful, or succeeds in passing but a few hard, dry pieces. Usually after such a trial the animal stands perfectly still and looks around toward his flank, or stands with tail between his legs. The appetite is depressed or in complete abeyance, the abdomen hard and tucked up or, at other times, tympanitic. Fever is usually absent or of a mild type. The depression increases and the animal avoids exercise. Vomiting may be seen but is not very common. Occasionally a diarrhea is encountered where the liquid contents of the anterior part of the bowels have in some way passed around the accumulation of hard material.

Diagnosis. This must be made from the symptoms and an examination of the animal. Palpation of the posterior part of the abdomen will, if the animal is not too tense, reveal a hard sausage shaped mass reaching into the pelvis and often extending anterior up to the sternum. This mass will be found irregular and frequently may be dented or broken up with the fingers during palpation. Palpation causes little evidence of pain. The circum-anal parts are usually soiled with gritty fecal material and are inflamed. In the so called "false constipation" the sticky semisolid stools mixed with the hair form a stiff mass around the anus which inhibits the passage of more feces. I always feel that it is a dirty trick to give a laxative to a dog with false constipation. Digital examination of the rectum will confirm our suspicions of impaction. We are usually able to feel the hard masses without any trouble, but sometimes we find this impossible. However with the hand crowding down on the mass through the abdomen we can ordinarily push it within reach of the fingers inserted well into the rectum.

Course. This disease is chronic, lasting from a few days to some weeks, and there is considerable liability of recurrence.

Treatment. The treatment varies greatly

as to the cause, and condition. Ordinarily we divide it into (1) dietetic, (2) medicinal, (3) mechanical and (4) surgical.

1. Dietetic: The history will ordinarily give an idea as to what is causing the trouble, and, of course, this should be eliminated from the diet. So far as possible avoid bulky, or indigestible food; potatoes, bones, biscuit. During the heighth of the disease feed only milk, meat or broth. While exercise does not come under the diet, this is a good place to say that proper exercise will sometimes prevent a recurrence of the impaction.

2. Medicinal: In mild cases of constipation that are short of causing impaction, purgatives may be very useful; castor oil one-half to two ounces; calomel, cascara sagrada, etc. In severe impaction, purgatives are worthless, even the strongest will not produce any good results.

3. Mechanical: Enemata of some form are most useful. The favorites are soap and water, glycerin and water, oil, etc. Sometimes good results are obtained if pressure is made upon the side of the animal at the time he makes expulsive efforts after receiving a bowel full of solution. If the material cannot be washed out it must be removed with forceps, or broken up and removed. The finger will do fairly well to break the mass if nothing else is available. The handle of a teaspoon or other dull instrument may also be used. The whole amount of the obstruction, ordinarily cannot be broken down and washed out at one time but requires many patient mining operations. The usual progress is about as follows:

A small amount is broken up and washed out, then the animal either forces more within reach or we push it within reach by abdominal palpation and again remove what we can; this process is repeated until all is taken out, or until we believe the animal needs a rest and he is left for a few hours; then we usually find that the rest of the material has descended to within our reach. As a rule also the latter part removed is not so hard as the first part.

At one time a hollow currette was highly recommended because this could be used as an irrigator at the same time the breaking process was taking place, but this has never worked well for us. It was made for human uterine currettage and is not adapted for fecal impaction. There are two or three pieces of apparatus on the market especially designed for giving enemata to dogs, but, while convenient, they are not indispensable. In emergency a rubber tube and funnel or irrigating can may be used; not so handy but just as effective.

I believe the secret in these manipulations, if there be one, is to hold the solution in the rectum until it is full and then encourage the animal to expell it quickly and thus wash the mass out of the dilated rectum much like a log going down stream in flood water. Manipulation of the anus and rectum may cause some inflammation and it is therefore good practice to inject some bland oil to soothe the parts.

4. Surgical: Surgical treatment of impaction is not often necessary. Mechanical measures ordinarily suffice but if surgery must be resorted to it consists in doing a laparotomy and manipulating the feces back where they can be grasped and broken up with forceps or in incising the intestine and removing the feces in this way. This is a rather dangerous procedure, on account of the relaxed condition of the gut and accummulations of feces; but in extreme cases should be done because the animal must have relief. I have never had to resort to it. We started such an operation once in which we had a perfect picture of impaction out of reach of the finger. There was the same straining and passage of a small amount of material and this was blood mixed with grass or excelsior, the tumor could be easily palpated but could not be moved back within reach. Upon opening the abdomen the condition was found to be a carcinoma of the rectum 8 to 10 inches long and with walls nearly half an inch thick. Naturally the anesthesia was pushed to a fatal conclusion.

Acute Obstruction of the Bowels

By H. J. MILKS, Ithaca, New York

ACUTE obstruction of the bowels is not an every day occurrence but it is seen often enough and its severity is so great that it makes one of the emergencies of veterinary practice. Considered as a whole acute obstruction is most often seen in young dogs although it is by no means confined to them.

Cause. The causes are foreign bodies which the animals have swallowed, intussusception, stragulation, twists, parasites and volvulus. Of these intussusception and foreign bodies comprise the great majority.

Symptoms. The symptoms develop very suddenly and no matter what the cause there are certain ones which constitute a fairly clear clinical picture. These are pain, bloating, vomiting, constipation and collapse. The pain may develop without warning and sometimes after severe exercise, and may be either constant or occur in paroxysms. Bloating is not a very important symptom of obstruction in the dog. In our experience we have rarely encountered it in acute obstruction. Peristalsis may be increased for a time but constipation sets in after the material posterior to the obstruction has been passed. In obstruction due to intussusception bloody mucous may be passed from the bowels. Vomition is a common characteristic. The vomitus at first consists of food material and later is fecal. Fecal vomition may be considered as diagnostic of obstruction but it does not always occur if the posterior part of the bowels is the seat of the trouble. Collapse comes on early and is shown by the temperature, thready, rapid, pulse, rapid respirations, pale mucous membranes, and dull and anxious expression.

The differentiation of the causes of acute obstruction of the bowels is not easy and yet intussusception deserves a little special attention. In the first place is usually occurs in young animals and although it is impossible to satisfactorily acccount for it, it is well known that it often follows sevère purging. Occasionally animals die quickly (over night) under suspicious circumstances. We have had several distemper cases go in this way. Just the other day an adult police dog was brought to us in the morning. He had been well the night before but was in very bad condition at the time he arrived. He passed bloody liquid feces and died within a short time before a diagnosis could be made. Autopsy showed intussusception of the ileum into the colon.

Diagnosis. This must be based upon the sudden severe onset, rapid course, fecal vomiting which is pathognomonic of some sort of obstruction and finding the obstruction by palpation or the X-rays. Careful palpation of the abdomen will frequently locate the trouble but not necessarily the type of obstruction. Foreign bodies are often palpable as are intussusceptions. The latter will be felt as a freely movable sausage shaped mass in the abdominal cavity and sometimes it is possible to make out the conical end of the invaginated part and the blunt end where the bowel turns in. This might be confused with impaction of feces, but fecal impaction occurs more often in old animals, comes on slowly, occurs in the rectum and colon, is not so movable, and may be determined by rectal examination. The course is not so rapid nor the symptoms so severe. In extreme cases an X-ray might be used but too much time should not be lost before an exploratory laparotomy is made. This is not dangerous and is necessary before an absolute diagnosis can be made. Furthermore it is the first step toward treatment and one should be prepared to do what is necessary when one opens the abdomen.

Treatment. The medicinal treatment of acute obstruction of the bowels is not important. Strong purgatives, enemata, etc., usually just take so much more time, and since an operation is almost inevitably necessary it should be undertaken while the chances of recovery are good. We will

assume that the abdomen is open. Then search for the obstruction. If it is a twist, correct it, if a foreign body, remove it. It is well in this case to make the incision a little away from the body in sound tissue so that the opening will not have to be through diseased gut. In making the incision through the gut, make a transverse one because when this is sutured a new bend or kink is made in the intestine with a larger lumen than normal while a longtitudinal incision always means a decrease in the size of the lumen.

If an intussusception is encountered one of two measures are in order, first reduce it if possible. To do this reduce the edema by steady pressure on the swollen part. Then seize the bowel below the tumor and press gently against the apex of the invagination and at the same time apply steady traction on the other end. The pressure will do more than the traction and is less liable to tear the gut. Care must be taken, of course, not to injure the intestine. Any adhesions may be broken down with a flat dull instrument such as the handle of the knife. After the reduction is completed examine carefully for tears or points of necrosis and cover these with a Lambert suture. If the whole section is gangrenous it must be removed and anastomosed by some familiar method, such as the one described elsewhere in this issue.

FRIGHT DISEASE

Running fits, fright disease or furious fits, epizootic hysteria, etc., is in the main the result of ignorance in feeding the dog and mishandling. No part of the country has a monopoly on this condition nor is it a new disease, nor any one particular ailment.

The disease has some appearance of being infectious. When it appears in a district, numerous cases are apt to occur for a year or two, and where a number of dogs are kept together, it is not uncommon when an attack appears in one dog for others to develop it. Despite considerable investigation, no organism has been isolated that could account for the disease, nor can it be communicated with any certainty by association. The injection of body fluids and excreta is uniformly negative.

The ailment seems to have its origin in the mucous membrane or the skin and to be due to an irritation in these organs. Gastro-enteritis and particularly enteritis is a very common lesion in animals dying of fright disease.

In the mild type of fits, the animal may merely run and hide in some dark place for two or three hours. In more pronounced cases, the dog may exhibit great fear and possibly bark wildly and at times bite anyone who approaches. In the running type, the dog will run until it falls from exhaustion, sometimes until it falls dead. It is differentiated from rabies by its sudden onset; from the nervous form of distemper by the history, and from other conditions by its violence.

The treatment consists in removing the cause and in most cases in that alone. Gastro-intestinal lavage is of first importance in removing irritating matter from the alimentary canal.

In such cases, gastro-intestinal lavage will sometimes remove a surprising array of objects—cooked liver, which is indigestible for the dog, bottle caps, wax paper cups, oil cloth, coal, bones, nails, tacks and almost everything else that a dog can get hold of and swallow.

If gastro-intestinal lavage is not practicable for any reason, arecolin hydrobromid one-eighth grain to one and one-half grains depending upon the size of the dog, may be given. Apomorphin likewise, is useful in 1/40 to 1/5 gr. doses hypodermically.

Where the ailment is due to dietary deficiency, it will require time to relieve it. Feed the animals raw meat, raw milk, raw eggs, tallow, bones and non-starchy vegetables, and give a dram of cod liver oil three times daily and one to ten grains of calcium lactate at the same intervals.

For the lavage, use normal salt solution or soap emulsion. It is easier, of course, to give the lavage after the animal has quieted, but sometimes it is necessary to treat it during the convulsion.

Intestinal Anastomosis

By H. J. MILKS, Ithaca, New York

THERE are several methods of anastamosing the intestines. In general they may be divided into end to end and side to side, with a number of ways in which to suture. The following end to end method, adapted from Gould's Operations upon the Stomach and Intestines, requires little in the way of special instruments or technic and is very satisfactory.

Materials needed. Two rubber covered intestinal clamps, round pointed needles, No. 0, medium hard, chromic catgut, silk or celloidin linen and the usual line of small operating instruments. Almost all kinds of suture material have been used in this kind of work. Some operators prefer a non-absorbable one for the first row and absorbable for the burying sutures. In our experience a No. 0 medium hard, chromic gut answers well for both rows. It is a little hard and stiff but may be easily softened by a moment's imersion in hot water.

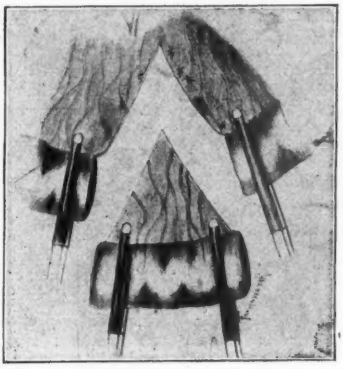

Fig. 1. Excision of intestine and its mesentery.—Bickham.

Operation. We will assume that the abdomen is open, the diseased portion brought outside and walled off with sterile packs. Clamp off the part to be resected, ligate all vessels in the mesentery and remove the diseased portion of the intestine together with the mesentery, Fig. 1. Bring the two portions of the intestines together so that they are parallel and the two mesenteric borders adjacent, then place a mattress suture as follows: Starting inside one portion of the bowel a little to one side of the mesentery insert the needle from the inside to the outside of one portion, then from outside to inside of the other, finally crossing over the mesentery and reversing the process back to the part of the intestine in which the suture started and tie inside the gut. Be careful to catch the two layers of the mesentery in each portion of the bowel. Then start the continuous suture a short distance to one side of the mesenteric attachment, tie outside the bowel and leave the long end as a guide or stay suture. Place another stay suture about an equal distance the other side of the mesentery about one-third the circumference of the bowel from the first, tying on the inside of the bowel, leaving the long end for the assistant. Upon pulling these guide sutures the cut edges are exposed and held in apposition. The continuous suture is now passed from one guide to the other, Fig. 2. When the second guide is reached, place a third, half way between

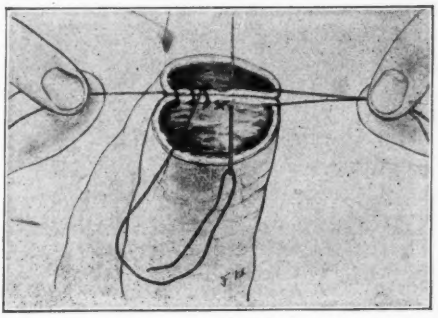

Fig. 2. End to end anastomosis. Sewing mesenteric third of circumference. The guides are held by an assistant. The one to the left is the long end after beginning the suture.—Gould, "Operations upon the Stomach and Intestines."

the first two, on the free edge of the bowel opposite the mesenteric attachment leaving the ends outside. With the assistant holding the second and third guides continue the suture until the third guide is reached. The assistant then takes the first and third guides

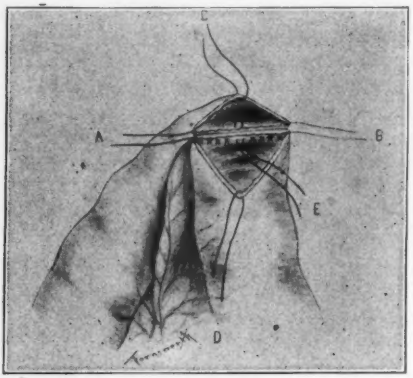

Fig. 4. Completing the last third of circumference. Notice that the needle enters and leaves the bowel opposite to that of Fig. 5.—Gould, "Operations upon the Stomach and Intestines."

and the suture is continued as before except that in closing the last third of the circumference the needle will have to pass through the bowel in an opposite direction,

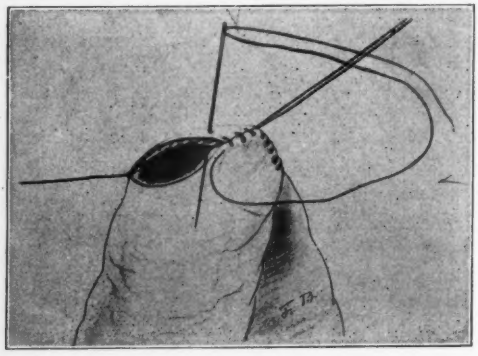

Fig. 5. Placing the Lembert stutures.—Gould, "Operations upon the Stomach and Intestines."

that is, first penetrate the serous instead of the mucous coats, Fig. 4. When the first guide has been reached, tie the suture to the long end of the first knot and remove the other guides.

The seromuscular sutures are placed as

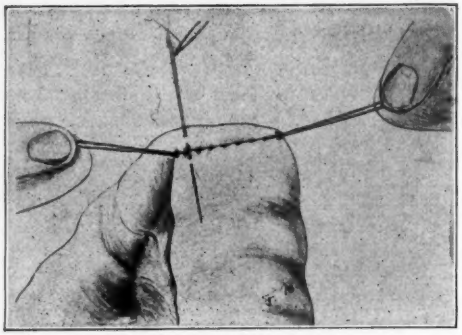

Fig. 3. End to end anastomosis with Connell's mattress suture.—Bickham.

follows: Insert the first interrupted stitch on the free edge opposite the mesenteric border, then place two others on opposite sides of the mesenteric border, leaving the ends long in all cases to serve as a guide for the

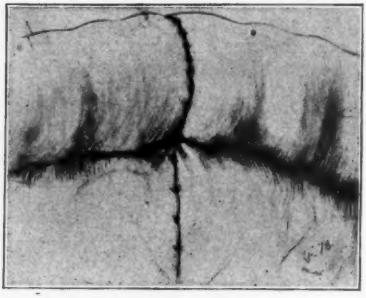

Fig. 6. Lembert sutures have been completed and the mesentery caught together with interrupted sutures.—Gould, "Operations upon the Stomach and Intestines."

continuous suture, which is placed as shown in Fig. 5. The Mesentery is approximated as in Fig. 6.

The continuous suture is more rapid than the interrupted and controls hemorrhage better but may be replaced with simple interrupted or mattress sutures if desired. Fig. 3 shows how the latter are placed in the first row.

Points To Be Observed in Treating Fractures in Dogs and Cats

By C. P. ZEPP, New York City

THE importance of fractures in small animal practice has increased so materially in the past few years, due to the increased number of fractures and to the greater value of the animals we are called upon to treat, that I feel an article on this subject may be of benefit, especially to the veterinarian who has not given it serious thought, or who may be called upon to treat such cases but infrequently and who therefore may be caught napping.

It has been the custom of some veterinarians, when a dog or cat is brought to them with a complicated fracture or fractures, to hastily suggest to the owners that the animal should be destroyed. One should not be too hasty in reaching such a conclusion since he is dealing either with a very dear pet of the owner or, in a large percentage of cases today, with an animal of considerable economic value. They do not care to end it all so suddenly. They may either try elsewhere, or if they should consent in the excitement, will later, when thinking it over, feel that something should have been tried. Therefore, to prevent this possible dissatisfaction, I feel that a thorough examination of the dog and a complete explanation to the owner should be made.

The explanation, in a large percentage of cases, especially where there appears to be a shock to the animal, should be made immediately and the examination should be carried out the following day or at least after the animal is over the shock to the extent that the examination will not aggravate it. This will often be a benefit to the veterinarian in a number of ways. He may discover conditions not noticed; the animal may not survive the shock, and in that event, destruction need not be suggested; and most important, however, the owner will be in a position to more willingly listen to your suggestions. The owners, as a rule, do not like to have the veterinarian suggest taking the life of their pets. They will usually come to the decision themselves after they have the condition and the possibilities of the outcome thoroughly explained to them. Thus, the veterinarian will be relieved of all responsibility; in other words, he will "pass the buck."

I have a case in mind which suggested a large part of the above discussion. A brindle bull terrier dog, about four years old, had been hit in the region of the right shoulder by a taxi about two hours before it was brought to my hospital. The dog had been taken to another veterinarian, and the owner had been advised by him to destroy the dog because it was impossible for it to get well. The explanation was that the dog had internal hemorrhages and a broken humerus near the shoulder which could not be treated successfully.

I will admit that the case looked hopeless when the owner laid the dog on the table, limp as a rag, pale and with practically no heart action. My first step was to give a stimulant for shock before making any examination for fractures or physical injury. The dog appeared to respond in a short time to the stimulant, so I attempted to make a brief examination of the part supposedly broken, feeling that the patient was out of the shock enough so that my examination would not add to the severity of it. I did not find a fracture of the humerus near the shoulder joint as had been reported but, instead, a paralysis of the whole right front leg. This presented a very serious condition which I explained to the owner, but withheld a definite prognosis until 24 hours had elapsed, since it might be

only temporary paralysis. I made the dog comfortable for the night and, having satisfied myself that he was coming out of the shock, went about my business. The next morning, to my surprise, the dog was up, using all four legs, and appeared no worse off for the inconvenience he caused the taxi driver. The dog was discharged and is still healthy. The owner is happy but somewhat skeptical as to veterinarians.

This case clearly and forcibly illustrates the importance of not being too hasty. Another reason why the veterinarian should not be too hasty, is because nature works wonders. In cases where the veterinarian is unable to assist in treatment of fractures, Nature frequently can do much, especially in small animals that are capable of enduring hardships during the time She is doing the reconstruction. One cannot appreciate this until he has studied the cases Nature has been called upon to treat single handed and has noted the results.

In making an examination of animals, which have met with a mishap, one should be very thorough since it is from the examination he must make the prognosis. The prognosis given after a very thorough examination may save the veterinarian embarrassment later when he may be called to treat the case again for some other condition. I have in mind such a case as a fracture of the humerus complicated by a brachial paralysis, permanent paralysis resulting, and fracture of the pelvic bones which heal in a deformed position. In ignorance of the deformity, the owner breeds the dog, necessitating at whelping time a caesarean operation. Such cases are presented very often with the complaint from the owner is that the veterinarian should have noticed it and told him. The veterinarian should always test for paralysis, especially if the fracture is in the front leg. He should always make a rectal examination, or an X-ray examination if the injury is in the region of the hip.

Fractures are defined as a break in the continuity of a bone or bony cartilage. Therefore, when the veterinarian is called upon to treat an injured dog or cat having a fracture, his task is to replace the broken ends of the bones into their proper position and to hold them there until nature completes the process of healing. He must remember that the patient, dog or cat, will resent the treatment and naturally will attempt to prevent its being applied, or, if it is once applied, to get out of it. Also, the patient cannot be kept quiet, and by continually walking and using the affected part may do harm to himself, such as galling, or may be cut by the bandage.

The replacement of the broken ends of bones is best accomplished when the dog or cat is under anesthesia, preferably morphin, H. M. C. or chloral hydrate. This prevents struggling by the animal and causes relaxation of the muscles so that the broken ends can be replaced and held more easily while applying treatment. Having the animal under anesthesia is not only important for the successful application of treatment but for the satisfaction of the owner who otherwise may think the dog is being put to terrible pain. In my opinion, it is almost impossible to successfully set fractures of some dogs without having them under an anesthetic, to aid in restraining them and to relax the muscles. In cats, I find chloral the best anesthetic since it appears to have no harmful effects and lasts for a long period of time.

To keep an animal under the anesthetic for quite a period after the replacement of the fractured bone is also very important for unless it is done, in a large percentage of cases, the animal will either slip out of the bandage or cast, or bring about a displacement of the fractured ends before it finally stops fighting to free itself of the cast. One must take special pains in applying treatment to fractures of cats or one will later find that the patient has pulled the part free.

After the fracture has had the treatment applied, there are a number of

things which must be watched closely. The patient should not be discharged to the owner with directions to remove the splint or cast at such a time, with no further instruction. The owner should be carefully instructed as to how the patient should be kept, that is, as quietly as possible and not to get the bandage material wet; the type of food best suited for bone healing, and that the patient should be brought back for examination once a week until the cast is removed.

The owner, as a rule, takes everything for granted. He believes that the setting of fractures is all there is to it, and will not pay any attention to it until the time to remove the cast has arrived unless thoroughly instructed differently. In some cases, although they are instructed, the owners will pay little attention. In these cases when the dog is brought back once a week, we can check up. There are other reasons why the dog should be seen by the veterinarian occasionally, viz.: to make sure that the bones have remained in apposition, that no pressure necrosis results from too tight a bandage and that the bandages are not galling or cutting some part of the patient. Then, also, we should not make the setting of a fracture too trivial an affair.

The following description of the general procedure I carry out in the setting of fractured limbs will in general apply to any bone.

First I restrain the animal, then, placing the ends of the bone in apposition and having an assistant hold them so, I apply a padding of good quality cotton, then bandage enough to hold the padding in position and to give a distinct surface to apply splints. (I find the two-inch bandage better than the wider ones.) After this I apply the splints which have been shaped to suit the fracture and again bandage until I have the part so that it cannot be moved out of place. After this I apply adhesive tape. The adhesive tape, I feel, serves a number of purposes in that it does not allow parts of the bandage to work loose, prevents the dog from getting hold of threads of bandage, thus starting a desire to chew it off, and allows an equal pressure to all parts by preventing the bandage drawing excessively on certain parts from the movements of the dog. A coating of shellac, varnish, liquid rubber or similar material will aid in keeping the bandage dry and clean and thus add to its appearance.

I don't think that it makes much difference what types of material are used for setting fractures since good results may be obtained with any ordinary material, provided it will keep the ends of the bone in apposition long enough to heal without doing harm to the patient. I prefer cotton, some form of wood splint which will bend easily when moistened, bandage and adhesive tape, rather than a plaster cast, since in dealing with animals where it is absolutely impossible to keep them quiet some elasticity is desired.

Result of a poorly set radius and ulna. The bandage in this case was removed too soon.

The length of time required for a fracture to remain in treatment depends upon the age and size of the animal. For young puppies in good health, eighteen days will be long enough; while in older dogs, three or four weeks may be required. Of course there are always exceptions such as compound fractures which may require more time to heal.

Pseudoleukemia in the Dog

Clinical Report by H. J. MILKS, Pathological Report by PETER OLAFSON,
Ithaca, New York

THE patient was an eleven year old male pointer.

History. The owner noticed a swelling on the right side of the neck several weeks ago but the animal had hunted fairly well. He had lost condition rapidly during the last four weeks, had been eating fairly well but had many poor days.

Examination. The dog was very thin. There was a swelling on the right side of the neck. This was flabby but did not fluctuate. The cervical, prescapular and popliteal lymph glands were enlarged but not painful. There was apparently an enlarged organ in the abdominal cavity but its identity could not be accurately determined.

Blood Examination. Hemoglobin 90 (Tallquist). Red cells, 7,360,000. White cells, 12,000. Differential count: Neutrophiles 77%; Monocytes 19%. Lymphocytes 4%. Occasional erythroblasts were present.

Diagnosis. Pseudoleukemia.

Prognosis. Poor. Dog destroyed on request of owner.

Autopsy

External examination: All the external lymph glands were markedly enlarged, especially the cervical, prescapular and popliteal.

Internal Examination: Neck. On the right side of the larynx there was a mass of connective tissue surrounding a central necrotic and purulent mass, four centimeters in diameter. The connective tissue and surrounding tissues were watery and translucent. No foreign body or fistulous tract could be found. It was impossible to tell whether this area of necrosis involved a lymph gland or not.

Chest Cavity: The pleura, normal. The lungs, collapsed and air containing throughout. The lung surface, stippled with deposits of pigments. (Anthracosis).

Heart: Soft and flabby with both ventricles in diastole. The chambers contained dark clotted blood. The tricuspid valve showed slight fibrous thickening along the edge.

Mediastinal lymph glands: enlarged, soft and pigmented. Each measured 5x2x2 centimeters.

Abdominal Cavity: The spleen was enlarged and nodular on the surface. It measured 17x6x1 centimeters. Many nodules were present, the largest being 2.5 centimeters in diameter; the smallest but a few millimeters in diameter. On section these nodules consisted of soft yellowish white tissue tinged with red.

The kidneys were of normal size. On section the cortex showed several narrow yellowish white streaks. On stripping the capsule, similar pale areas were observed on the cortical surface.

The bladder was distended with urine; the prostate slightly enlarged.

The pancreas was enlarged and nodular. On section the nodules contained soft white tissue.

The liver was slightly enlarged. The surface showed a yellowish white tracery. On section about half the tissue consisted of this light colored tissue.

The stomach was empty. Its mucosa bile stained.

The intestinal mucous membrane showed diffuse reddening and was thickened. Peyer's patches were slightly more prominent than normal.

The sublumbar and mesenteric lymph glands were enlarged, soft and friable.

In general, all the body lymph glands were enlarged, soft and friable. On section they were distinctly greenish.

The shaft of the femur contained red marrow.

Anatomical Diagnosis.

1. Pseudoleukemia (aleukemic lymphomatosis).
2. Abscess in the neck.
3. Intestinal catarrh.

4. Hypertrophy of the prostate.

Histology.

Lymph glands and spleen: Hyperplasia of lymphocytes with obliteration of sinuses and follicules.

Liver: Periportal lymphocytic infiltration replacing two-thirds of liver cells.

Lymphocytic infiltration of the kidneys and pancreas.

Comment

Pseudoleukemia and Hodgkin's disease have commonly been used as synonyms. In Hodgkin's original description the two conditions were described as one. In current pathologies the term Hodgkin's disease is generally limited to a specific disease condition that is grouped with the infectious granulomata. The etiology is still uncertain although there is some evidence that it may be some form of acid fast organism. Hodgkin's disease has a specific histological picture consisting of lymphoid cells, irregular mononuclear cells and peculiar giant cells. Many eosinophiles are usually present and small necrotic areas may be present. Fibroses is marked in the later stages. The granulomatous character of this condition separates it from the leukemias and pseudoleukemias. Atypical cases occur and these are difficult to classify.

ENTROPION IN THE DOG AND CAT

This anomaly is not confined to any one breed of dog but is probably more often seen in chows than others. It may involve either one or both lids of the same eye and may occur simultaneously in both eyes. The symptoms are those of a severe conjunctivitis or keratitis as would be expected from the contact of the hair with the eyeball. The history of a long-standing eye trouble should always cause one to suspect entropion.

Diagnosis. This is made from a careful examination of the patient. There is the usual persistent inflammation of the eye, and upon close examination, the lids will be seen to turn in. Unrolling the lids will often help the diagnosis. In many cases the eye is so sore that the animals will not open them or allow one to do so. In such instances, anesthetizing the eye will aid, greatly in the examination and diagnosis.

Treatment. This must vary greatly as to whether both lids are involved or not and as to the amount of the entropion. If the condition involves both lids and is severe, shave and disinfect the skin in the region of the operation. Then inject some local anesthetic around the circumference of the lids in a line about ⅛ to ¼ in. from the edge. Make incisions as follows:

1. Starting at a point about ¼ of an inch external to the outer canthus, make an incision in one of the lids parallel to and about ¼ inch from its edge, extending as far toward the internal canthus as is determined from the examination, or in other words a little farther than the lid is turned in.

2. Join this at the external corner with similar incision in the other lid.

3. Starting at a point ¼-½ inch (as determined by the amount of skin to be removed) external to the point of juncture of the two described incisions, make another incision, curving slightly, downward in the lower, upward in the upper lid, parallel to and about ¼ to ½ in. distant from the first incision and finally joining it at its inner terminus.

4. Join this with a similar incision in the opposite lid. Then dissect out the skin between the two incisions and suture. The first suture should unite the edges of the angle at the outer canthus. A bandage may be applied if desired but most dogs do well without.

Another method is to remove oval pieces of skin from the involved lid or lids. Some operators suture these openings and others do not. We believe that all these wounds should be sutured since the job looks more complete, healing will be more rapid, and the scar not so great. Iodoform and thymol iodid in collodion makes a nice dressing for entropion.

Ithaca, N. Y. H. J. Milks.

Enucleation of Eye Ball

By H. J. MILKS, E. D. PECH, "29," E. C. BAXTER, "30," J. H. BARRETT, "30,"
New York State Veterinary College, Cornell University, Ithaca, New York

THIS patient was a two and a half-year-old Boston Terrier. Two months ago he had been scratched in the eye by a cat, an ulcer had developed and the eye continually increased in size. It appeared to cause the dog considerable pain and the owner much annoyance.

Examination. The enlarged eye was twice the size of the normal one; the cornea was rough and largely replaced with scar tissue. What little of the interior could be seen appeared clear. The eye of course protruded greatly. This is plainly shown in the illustration.

Diagnosis. Hydrophthalmus or dropsy of the eyeball. The owner desired to have the

Hydrophthalmus.

eye removed, and since nothing could be done to improve the condition, it was done.

Operation. Nov. 1, 1928. The dog was given one grain of morphin sulphate subcutaneously and in approximately one-half hour was placed upon the table in the abdominal position. Both lids of the eye were scrubbed and shaved and then disinfected. Then a 2% solution of procain was injected in a complete circle around the lids and more injected through a needle inserted through the skin down deep in the space behind the eye. An incision was then made along each lid about ⅛-¼ inch from their margins and joining each other at the canthi of the eye. The skin was then dissected away from the conjunctiva leaving the latter attached to the eye. This was done by having an assistant use traction either on the conjunctiva or skin and the operator on the other. When the conjunctiva had been dissected loose, the various muscles were incised as close to the eyeball as possible and finally the optic nerve and vessels along it grasped with forceps and severed with scissors.

While dissecting close to the posterior part of the ball, it was cut and collapsed. This added a little to the difficulty of removal. Profuse hemorrhage followed the operation, so profuse that it had to be controlled by ligation. A pack was not effective. After the hemorrhage was controlled, a gauze pack saturated with 20% ichthyol in glycerin, was placed in the cavity and held in with sutures.

The following day the pack was removed and the wound dressed with chlorazene solution. The cavity appeared very deep but it was clean and looked like they all do, as though they would never fill up. The socket was irrigated daily with chlorazene and at no time was there any pus. On the 6th, five days after the operation, it was observed that the cavity was filling in; on the 9th day it was healing rapidly; on the 12th it showed a very marked improvement, healing having taken place very rapidly during the past three days and opening was nearly healed shut. On the 15th day there was but a very small opening left, and on the 17th day—16 days after the operation, the opening was healed, and the dog was discharged.

Comment

This operation is often necessary from numerous causes. Very often the operation cannot be carried out exactly as outlined above on account of injury. Sometimes the

eye is already out of the socket and at times it appears that the other dog has done a most complete job of it. Even when tempted in these cases to snip off the remaining attachments and let it go it is much better to carefully remove all the mucus membrane because if this is not done the cavity will always appear unsightly. We have rarely succeeded in getting healing of the lids by first intention and it is doubtful if there is much advantage to it. If pus should form behind the sutured lids healing would be delayed. Furthermore the cavity is so deep that granulation is of real value to flatten the scar. For some time we have discarded aqueous packs in favor of oily ones because the latter can be removed much more easily and with less damage to the wound. There was far more hemorrhage in this case than is usual. Furthermore the blood did not clot well. The case healed in about the usual period of time.

Are Habits Profitable in Clinical Examination

By F. E. McCLELLAND, Buffalo, New York

Force of habit based on some sort of system has both its advantages and disadvantages. If it allows us to become too mechanical it is bad; if it allows us to overlook the unusual symptoms in our cases it is inexcusable; if, as I have seen, it creates an impression of carelessness on the client it is fatal. I think we may feel certain that most of us who have been in practice any number of years have brains enough to avoid these dangers.

However, there are methods used habitually which are decidedly advantageous both for efficiency and profit. A patient is brought into the office by a worried owner who has been confused by the advice of all the neighbors. It is not wise to ask such a person direct questions and expect an intelligent answer. Our usual method is not to ask, "how long has it been sick?", but "you noticed it acting like this about two days or a week?" Not "what have you been feeding?", but "does he like meat or milk or sweets?" Not "where do you think he caught this disease?", but "have you taken him visiting or has he any playmates in the neighborhood?" Following these questions almost without exception an observation of the mucous membranes of the eyes and mouth, palpation of the abdomen and taking the temperature is the procedure. The habit of giving an enema, especially on the first visit of the patient has proved to be of great benefit and aids in diagnosis.

The usual stock preparation and prescriptions are not quite so constant. The majority of these are used for a while and are gradually replaced by others. There are, however, a few which stand the test of time. The best of all perhaps are the aqueous suspension of one of the various gastric sedative powders which may be used as the vehicle for sedatives, antacids, intestinal antiseptics or tonics; a cough and fever tonic composed of tinctures of bryonia and nux vomica in a glycerinated gentian elixir base and eye lotions of metaphen or zinc sulpho-carbolate. Each one of us will have his pet skin lotion and worm mixture. For enemas a magnesium sulphate solution has become very popular.

These suggestions I feel sure from experience will not only relieve much of the tension due to uncertainty of diagnosis, but will save time and become a source of profit.

Pyometra in the Bitch

By H. C. STEPHENSON, Ithaca, New York,
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PYOMETRA in the bitch is a collection of purulent material in the uterus. The infection is of a chronic or subacute type. The character of the material present may vary from thick creamy pus to thin blood streaked material. In some cases the contents of the uterus is a clear watery fluid. When infection gains entrance at the time of whelping or, if already present, becomes active at that time and produces an acute inflammation, we call it metritis. Pyometra is a chronic condition.

Symptoms. The symptoms are vague and usually do not point to the uterus as a diseased organ. In a few cases there may be a vaginal discharge of muco-purulent material. In the great majority of cases there is no such discharge. Usually the first symtom noticed by the owner is occasional vomiting. There is a gradual loss of appetite. The bitch loses strength, becomes thin, is dull and is able to retain but little food. The temperature is not high, may even be normal or low normal. Near the end the bitch may be comotose and the temperature subnormal. If the cervix is open there may be alternate periods of dullness and normalcy, depending on the amount of purulent material retained at different times. Some bitches may have a history of poor health and two or three attacks of vomiting, recovery from each attack of vomiting taking place after the discharge of a small amount of pus from the vagina. The vomiting is due to the diseased uterus and not because of gastritis.

Occurrence. Pyometra is found only in sexually mature dogs, dogs that have passed through at least one period of estrum. The breeding history may be indicative. In most cases the bitch has been bred, either by intent or accident, but did not conceive. Some weeks or months later the physical condition of the bitch becomes affected.

Examination reveals an animal in poor flesh. The abdomen may be enlarged. Looked at from above the abdomen may be slightly pear shaped, the lower portion being distended. The presence of fluid can not be demonstrated in the usual manner as ballotment does not cause an undulating wave to pass through the abdomen to be felt by the hand on the opposite side. That the uterus is the organ affected can be determined by the size and location of the swelling within the abdomen and by feeling for the bifurcation, which is found readily in the majority of cases. In some cases the uterus may be so distended that it can not be recognized as such, except for the fact that the distended organ felt is on the floor of the abdomen, and also because there is no decrease in size after catheterization.

Diagnosis. This depends on the symptoms, history and examination. It is arrived at by a process of elimination. Vomiting is very significant. That in addition to the facts found on examination should tell whether the uterus is involved or not. If there is continual or intermittent discharge of purulent material from the vagina diagnosis becomes much easier. The history of the case when obtainable is very helpful.

Treatment. The treatment depends on whether or not the cervix is open. If the cervix is open, irrigation, using a return flow tube, is the procedure to employ. Any of the various antiseptic solutions, that are tolerated by the uterus and vagina, may be used. A few cases clean up rapidly but the majority require repeated irrigations, and treatment may cover a period of weeks. It is doubtful if forcible opening of the cervix, in order to drain the uterus, is indicated. If the inflammatory process has been such as to close the cervix, in all probability the infection can not be cleaned up by irrigation. Anyway the bitch is probably hopelessly sterile.

If the cervix is closed, practically the only

procedure possible is the removal of the uterus and ovaries. This operation is the same as for spaying but with the additional hazard of infection. In addition to the regular procedure for spaying, the body of the uterus should be ligated in two places and cut off between the ligations, thus preventing the contents of the uterus from running into the abdominal cavity. After removal of the uterus the infected mucus membrane in the remaining stump of the uterus may be disinfected by first cauterizing with liquid phenol and then neutralizing the phenol with alcohol. This is done by dipping a probe in the fluids used, shaking it, and applying the film that adheres to the end of the probe.

Prognosis. The outcome depends on the physical condition of the patient. All cases in which the cervix is closed should be considered as being critically ill. Those in which the cervix is open will become critically ill if the cervix closes before the infection is cleaned up. Removal of the uterus should be followed by recovery of the patient except in those cases in a state of collapse or when the mishap of peritonitis follows the operation.

A Typical Case of Pyometra

In connection with this discussion I wish to outline one case that is fairly representative of this condition. Case number 110237, a four-year-old, female Pekingese. She had been bred some eight months previous to entry into the clinic. No young resulted from the mating. Some weeks after the breeding she had an attack of vomiting and there was a discharge of bloody purulent material from the vagina. The bitch was taken to different veterinarians, who all irrigated the uterus.

As the owner was traveling about the country the bitch was never in one place long enough to be properly cared for. At times the discharge was more copious than at others. When the discharge ceased the bitch became sick.

Because of the previous history it was thought that the better procedure was to remove the uterus. This was done. The operation was similar to spaying and fortunately the precautions taken to prevent peritonitis were successful. Recovery from the operation was uneventful. Each horn of the uterus was filled with bloody mucopurulent material. The walls of the uterus were greatly thickened. They were grayish in color and flaccid, there being no muscular tone. Each horn was some two inches in diameter. The ovaries were small, hard and grayish brown in color. The bitch was hopelessly sterile.

WARTS IN DOGS

Where warts occur singly, they may be tied off with suture material or rubber bands or snipped off with scissors or dissected out with the scalpel or cauterized with a hot iron or sloughed out with caustic applications as may be indicated in the individual case; but where they occur by the score or hundred or as they do in some cases, by the thousand, such treatment is ineffective, not only because the number of warts makes such treatment difficult or impossible, but because the warts in such cases recur with great rapidity. A better plan is to administer arsenic internally in full medicinal doses. The disappearance of the warts is more prompt and certain from this treatment than from any other.

The usual time required for the disappearance of the warts under the arsenic treatment is one week. The Fowler's solution should be administered three times daily and some practitioners at the same time apply it to the warts. Sodium cacodylate is said to be as efficacious in the removal of warts as is Fowler's solution.

CASTRATION

In every case of castration in the dog, young or old, ligate the cord. No ecraseur, emasculator or other instrument will prevent hemorrhage in all cases. Sometimes hemorrhage will occur and it is a difficult task to arrest after the cord has retracted and the tissues have swollen.

Likewise, always use a local anesthetic for this operation. It is humane to do so and besides, it pays.

Caesarean Section in Bitches

By H. J. MILKS, Ithaca, New York

CAESAREAN section is often considered a minor operation by those dealing entirely with the small animals but one dodged by the man in general practice. It is not a particularly hazardous procedure. Often it is one of those emergencies which must be met by the general practitioner.

This operation is more frequently necessary in the breeds with large heads and shoulders and small rear ends (pelves), such as the Boston Terrier and English Bull dog, than in the other or what might be termed normal breeds. The reason for this is the large head and shoulders of the pups and the small pelves of the mothers. Other breeds than those mentioned above have difficulty in whelping and a caesarean section may be necessary sometimes, because the father of the litter is of a much larger breed than the mother; sometimes the reason is not easy to find. We have come to believe that in those cases in which there seems to be room for the pup's passage, and yet there is dystocia, that infection is the cause of dystocia. The much greater frequency with which metritis and peritonitis follow caesarean section in these breeds appears at least to point this way.

The prognosis in Bostons and other types where dystocia is due to a narrow pelvis is better than in the breeds which ordinarily have no trouble in whelping. This we believe is due, as has been mentioned before, to an infection of the uterus as being the cause of the trouble and we consequently have an infected organ to start with.

There are two methods of procedure after the abdomen has been opened: (1) pushing the young along the uterus until they can be reached or the forceps applied to them; and (2) incision into the uterus and extraction of the pups. Theoretically the first method offers many possibilities. It is not necessary to open the uterus and it would seem less dangerous than that procedure. However, unless there is good help, this method is bound to be dirty since one cannot keep clean enough for abdominal work and at the same time work with the external genitals. Furthermore actual incision of the uterus is not a dangerous step and one should not hesitate to make it.

There are many different forms of technic, probably almost as many as there are operators. Some surgeous make the laparotomy through the median line and others through the side or flank. Those preferring the median line can do a little neater operation, perhaps a little easier, and the resulting scar will not show. The advantages of the flank (either flank will do) are that hernia is not so apt to follow the operation and the great advantage that the nursing puppies will not infect or disturb the wound.

Materials needed. Nothing beyond the usual operating instruments are required with the exception of suture material. One should employ a needle with a round point for suturing the uterus because it will push through and separate the fibers instead of cutting them as an ordinary suture needle will. Straight or curved needles may be used. We prefer the straight one for placing the Lambert suture. The ordinary straight sewing needle, like Crewel's No. 4, is all that is necessary. These may be purchased at almost any drygoods store and at a very low price. Catgut (No. 0 medium hard chromic) should be used in closing the incision in the uterus and the inner row of the laparotomy if two or more rows of sutures are employed. We have found the half meter (20-inch) sealed tubes very convenient. They remain sterile until used and three of them will finish a job, one for each row in the uterus and one for the peritoneum and muscles of the laparotomy.

Instead of going into the technic of the operation we will cite a case report from our clinic records by Mr. E. D. Peck, a senior student.

A Typical Case of Caesarean Section

The patient was a 19-months-old Boston Terrier bitch in very good condition.

History. She hed whelped normally on two previous occasions. Labor had started twenty-four hours before she was brought to the clinic. Twelve hours after labor started she delivered one live pup. Following that for approximately 12 hours she had not made any progress.

Present condition. The animal was in good physical condition. Several fetuses could be felt in the uterus but the expulsive efforts were too weak to expel them. There was one live pup in the body of the uterus just anterior to the brim of the pubis. There was some question of room in the pelvis for the passage of the pups but most of the dystocia was thought to be due to inertia of the uterus.

Operation

Preparation of the patient. The dog was given ½ grain of morphin sulphate subcutaneously and in 10 minutes she had vomited and was placed upon the table lying upon her left side. The right flank was washed and shaved and then disinfected with a 1 to 1000 solution of bichlorid of mercury in 70% alcohol. Then a 1% solution of procain was injected subcutaneously along the proposed line of incision, which was to be made in the flank region at about right angles to the direction of the hair and extending from near the mammae below to the heavier muscles above the flank. The right horn was brought through the incision and two sterile towels packed between the uterus and the walls of the incision. The horn was then incised on its dorsal surface where the blood supply is not abundant and the two fetuses in the right horn immediately rolled kicking upon the table. They were freed of membranes, the cord clamped with forceps and torn off. The were then handed helpers who dried them with warm towels. Two more fetuses were pushed around from the left horn and extracted through the same opening and treated in a similar way. Finally the one in the body of the uterus was removed. All were alive. A sterile towel was then dipped in warm physiologic salt solution and squeezed on and in the uterus to start contractions of the organ and rinse it out. At this time 0.5 cc of pituitrin was given subcutaneously.

The uterus was sutured with two rows of No. 0 medium hard chromic catgut with continuous Lambert sutures. It was then replaced and the abdominal incision closed in the usual manner. First using the catgut for the peritoneum and muscles and improved worm gut for the skin. After sponging the operating area with a 1 to 1000 alcoholic-bichlorid solution a dry, boric acid pack was applied and held in place by a bandage.

The local anesthetic in conjunction with the morphin made further anesthesia needless in this case, although it is sometimes necessary to give a few whiffs of ether. The patient recognized the puppies as soon as she was taken off the table, was sent home at once to be looked after by the local veterinarian and made a good recovery.

Comment

Morphin sulphate supplemented with local anesthesia is sufficient for most of these cases. In fact except for fear the local anesthetic would be enough and is in some dogs. However, they are more quiet under the morphin. There is no objection of course to general anesthesia. Such things are a matter of choice. We have not tried spinal anesthesia for this operation.

A continuous suture in the uterus has the advantage of being placed more rapidly and also more effectively controls hemorrhage. The secret of a continuous stitch is to always keep the thread taught. The method of closing the abdominal wound described by Mr. Peck in the foregoing is the one we follow. Sometimes we place three rows in this wound using one for the peritoneum and first layer of muscles, another catgut for the remaining layers and for quilting these to the first and closing the skin with silk or improved worm gut. Many other operators successfully close the wound with but one row of sutures and see no reason for more.

We have gone into this operation rather minutely, showing step by step one method that may be followed.—H. J. M.

Suppuration of the Anal Pouches

By Q. W. CANGI, Ithaca, New York,
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THE anal pouches, sometimes called anal glands, are located on either side of the anus. They lie in the periproctal tissue, just lateral to the terminal portion of the rectum. These pouches are about the size of a hazel nut and consist of a blind sac lined with a secreting epithelium containing tubular shaped glandular tissue. The duct which connects the pouch with the anus opens at the lateral side of the anus where the transition from skin to anal mucous membrane takes place. In the cat the opening is in the form of a small papilla which can be seen easily.

The secretion of these glands is usually gray or brownish, sometimes yellow, and has an acid reaction and a fetid odor. It is usually of the consistency of mucilage. If abnormal the secretion may be thicker, or if there is suppuration it contains pus which is often mixed with blood. Apparently these pouches have no real function since extirpation does not seem to interfere with the health or comfort of the animal, although Saunders in his "Canine Medicine and Surgery," ascribes a lubrication function to them during defecation.

Diseases of the pouches are not uncommon in the dog, though rarely seen in the cat. There may be a mild inflammation with slight pain or irritation. The inflammation in other cases may become severe and go on to suppuration. As a rule this results in retention of the contents due to closure or obstruction of the openings, or ducts, with consequent enlargement of the sacs. In a few cases many small abscesses form, which finally break through the anal region and form a series of sievelike perforations. More often a single large abscess forms which, eventually, breaks through the skin about one-half to three-quarters of an inch from the anus and discharges from this opening. In many cases the condition is accompanied by a very disagreeable odor which may be so pronounced as to make it uncomfortable for the owner or those about the animal.

Symptoms. Simple impaction is probably the most common form of disease in these cases, the ducts for some reason become closed and the secretion is not discharged as it should be. Itching is the most pronounced symptom. The animal appears uneasy, will continually lick or bite the parts. Often the dog will drag the anus along the ground or other surface, or rub it against the furniture, etc., in an effort to relieve the continual pruritis. Too often owners think this is a symptom of worms. It is surprising how much worm medicine is administered on this symptom alone.

When there is active inflammation the parts are very tender. The dog does not rub the part but nurses it carefully, diligently, avoiding palpation or other manipulation of the parts. Some cases act very peculiarly and are sometimes amusing to watch. They are uneasy, have a worried expression, and act as if afraid of something. They sit very carefully, and then suddenly jump and turn around as if stung or pricked, and look at or bite the part. Constipation is of common occurrence due to the painful defecation. A few are so sore that they will howl when defecating. In occasional cases the pain is so excruciating that the animal may be uncontrollable or delirious. In such cases the owner is quite apt to call it "fright disease." Introduction of the thermometer causes severe pain and much resistance. These cases, if not treated, will go on to suppuration and abscess formation. The parts may be red, swollen and hot.

Some cases that we have seen had such a disagreeable odor as to cause the owner to want to get rid of the dog. Often the odor is at first thought to be due to the flatus. We remember in particular an airedale that smelled so badly that he could not be kept in the house.

Treatment. This will vary with the individual case and clinician. Some simply expel the contents. This will give only temporary relief. In mild cases this may be sufficient, if repeated when necessary. Some destroy the pouches, and others dissect them out.

In the ordinary cases of impaction or suppuration, our procedure is to expel the contents every three or four days for as many treatments. Most cases get along fairly well with this treatment, but at best, it is only palliative. Yet not all owners care to have an operation done, nor do we think it necessary in order to keep the average case comfortable.

Expulsion of the contents may be done in two ways. Insert the forefinger inside the anus and push outward and backward with the thumb on the lateral side of the gland. The other way is to place the thumb on one side of the anus and the fingers on the other side and expel in this way. In any case it is well to place a little cotton over the anus to avoid getting spattered if the secretion spurts out as it sometimes does. In the very sensitive cases this procedure may be exceedingly painful. One case is reported where the shock from the pain caused by squeezing the pouches caused the death of an otherwise apparently healthy dog.

When the abscess has come to a head we treat it as any abscess by making a liberal incision over it about one-quarter to a half inch from the sphincter. After it is cleaned out we apply tincture of iodin to destroy the secreting surface. Local anesthesia may be used if necessary.

If it is desired to remove the pouches entirely, two methods may be employed. In either case it is well to prepare the animal first by giving a cathartic. Then dissect them out. This is not easy because there is no definite line of demarcation between the wall and surrounding tissue, but it can be done. The dissection should be done carefully for the rectum may be pierced, especially if the animal should make a sudden movement. This will result in a fistula which will necessitate treatment afterward.

The other method is to cut down over he gland, slit it wide open and pack with incture of iodin for twenty-four hours. This method is not so spectacular as the lissection, but the results are just as favrable. Local or general anesthesia may e used. The animal should be kept on soft diet for several days after the operation to facilitate the passage of feces.

In a few instances cases of rheumatism have cleared up after the pouches have been treated, but there was nothing definite that pointed to the anal glands as the focus of infection.

Many attribute various other conditions and diseases to these organs. This we think has been overdone. On the other hand, some state that these organs never become diseased. The one extreme, we believe, is as bad as the other. Personally, we know of no organ that is immune to disease.

RANULA

This condition occurs in the dog but less frequently than in the horse. The treatment is the same. Aspirate the contents with a hypodermic needle of fairly large gauge and before removing the needle inject full strength tincture of iodin. After massaging to make certain the iodin is brought into contact with all parts of the secreting membrane, open the ranula freely. If it is opened without destroying the secreting membrane, the condition will recur promptly.

A variation in ranulae in the dog or cat is their location mainly outside of the mouth, causing a swelling at the base of the ear or again causing the eye to bulge as in exophthalmic goitre. A careful search will reveal some portion of such ranulae within the mouth and at this portion they should be attacked.

Epidural Anesthesia in the Dog and Cat*

By E. R. FRANK, Manhattan, Kansas
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EPIDURAL anesthesia consists in blocking the nerve trunks within the spine but outside the dura mater.

We are convinced that an unfounded and unjustifiable skepticism still prevails among many excellent surgeons in regard to the use of local anesthetics for major operations and they cling to general narcosis as the only means of abolishing pain in their operations. The object of this paper will be to show that local anesthetics may be of service in dealing with major operations in which the role of anesthesia is of the utmost importance.

The advantages of epidural anesthesia are complete muscular relaxation and a negative intra-abdominal pressure. The main effects of epidural anasthesia are limited to a relatively small region of the body, leaving intact the central nervous system upon the integrity of which depends the continuance of all the vital functions of the body. Surgical convalescence is rendered shorter than after the administration of a general anesthetic.

Technic of Infection

In introducing local anesthetics into the epidural space one of the most important points to remember is to inject it *slowly* and without *pressure*. Toxic symptoms and some fatal results have occurred due to the too rapid injection of the anesthetic.

Procain dissolved in a physiological salt solution to the extent of 2% has been the preferred anesthetic because the toxic action is less than from any other known anesthetic substance and it is reliable in action. For hogs one cubic centimeter of a 2% procain solution for each ten pounds of body weight is usually sufficient. In dogs one cubic centimeter of a 2% procain solution for each five pounds of body weight gives the desired amount of anesthesia. Mature cats will require three cubic centimeters of a 2% procain solution, while the dose for younger cats will be smaller depending upon the size. Surgical anesthesia ordinarily takes place in five to ten minutes and lasts approximately forty-five minutes to one hour.

A glass syringe should always be preferred to any other as it transmits more delicately the amount of pressure which is being used to make the injection which is of utmost importance to the operator in determining if the needle is properly placed. The injection of the solution should require no more pressure than if it was being injected into a free space or another fluid. The thinner the needles the less the trauma to the tissues but the gauge of the needle should be compatible with its length. For dogs a 20-gauge needle, two inches long, is preferred, while for cats a 20-gauge needle, one inch long, is sufficient. In hogs an 18-gauge needle, three inches long, is usually ample.

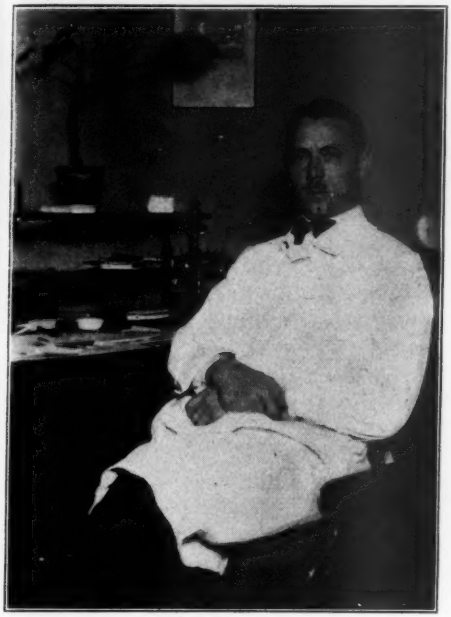
The Injection in the Dog

In the dog epidural anesthesia is accomplished by inserting the needle in the interstice between the last lumbar vertebra and the sacrum. The point to insert the needle may be located by palpating for the depression just anterior to the first sacral vertebra, or the depression may be located on a line drawn transversely across from the posterior borders of the wings of the ilium. It is preferred that the animal remain in the standing position so that the anatomical structures will be in normal position.

The needle should be inserted exactly in the center of the depression and tilted slightly backward. The depth the needle will have to be inserted will vary from one-half inch in small dogs to two inches in the

*Presented at the 35th Annual meeting of the Missouri Valley Veterinary Association, Kansas City, Nov. 20-22, 1928.

larger dogs. The operator can usually tell when the point of the needle has entered the



Prof. Franz Benesch, Vienna, who introduced epidural anesthesia of animals in America.

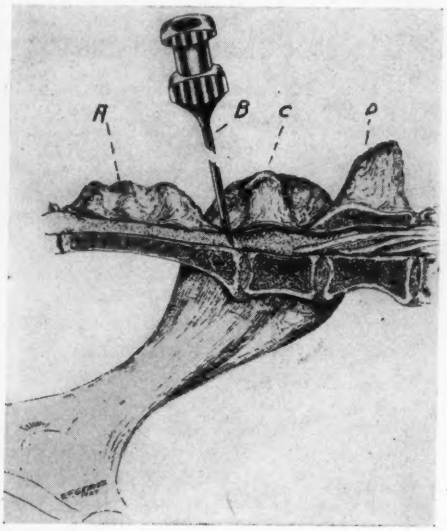
canal as the animal will usually wince with pain or after some experience he will get the "feel." It is very easy to miss the canal if the needle is not inserted exactly in the center of the depression.

If it is desired to operate in the abdominal cavity the posterior parts should be slightly elevated so the anesthetic solution will come in contact with nerves supplying that region. This anesthetizes the abdominal cavity and all parts posterior to it.

This method of anesthesia has been used in operations for caesarean section, spaying, exploratory openings, amputations of portions of hind leg, caudectomies, and reduction of fractures.

The Injection in the Cat

Epidural anesthesia in the cat is accomplished in the same manner as in the dog. The landmarks for finding the point of injection are the same as in the dog. The depth the needle will have to be inserted will vary from one-half to three quarters of an inch. Operations may be performed in the



Anatomical structures involved in the dog. A, sacrum; B, needle; C, last lumbar vertebra; D, termination of spinal cord.

abdominal cavity or parts posterior to it painlessly.

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Sisson: The Anatomy of the Domestic Animals.

Castration of unrestrained dog following epidural anesthesia.

The Control of Canine Distemper

With Special Reference to the Laidlaw-Dunkin Method of Immunization

By ADOLPH EICHHORN, Pearl River, New York

WHILE the infectious nature of distemper has been recognized since the earliest dates, the nature of the causative agent has been described by many investigators as being due to one of a great variety of organisms isolated but never satisfactorily confirmed. Not until Carré in 1905 succeeded in reproducing the disease with the filtrate of the secretions and thereby classing the virus among the filtrable organisms has the true nature of the virus been established. Even following the work of Carré, many investigators attributed the disease to other micro-organisms. With the more recent investigations, however, the work of Carré has been definitely confirmed.

Based on the numerous causes ascribed to the disease, a variety of biological products has been recommended from time to time for the prevention and treatment of the disease. Some of these have given somewhat favorable results which may be attributed to the fact that canine distemper in its uncomplicated form is not very fatal, but unfortunately it almost invariably is associated with secondary infections of a more or less pathogenic type.

No doubt, many of the investigators were misled by these secondary infections which from time to time revealed organisms which were incriminated as the true cause of the disease. The immunizing and other products prepared from these organisms would naturally have no effect on the cause of the disease but might in some instances exert a favorable action against the secondary invaders, which may explain the favorable results reported from time to time from the use of the different products.

The great destruction which the disease is causing among the dog population stimulated lovers of dogs to a determined action to inaugurate, experimental work in connection with the disease to the end that a dependable method of prevention and control of the disease might be discovered. Following the successful financing through the efforts of "The Field" in England, the Distemper Council was created consisting of some of the most eminent scientists in Great Britain.

After suitable premises were selected for the purpose of the investigation and precautions taken to insure the most thorough isolation of the animals purposely bred for the investigation, the work has progressed step by step until a method of immunization has been developed which not only in laboratory test but in extensive field practice proved effective. Dr. P. P. Laidlaw and Major G. W. Dunkin were chosen by the Distemper Council to conduct these investigations and a great deal of credit is due to these investigators for their untiring efforts of study and successful accomplishment.

Their investigations were of course not limited to the development of a product for the prevention and treatment of distemper but to study the various phases of the disease with special reference to etiology, pathogenicity and pathogenesis. One outstanding feature which has been definitely determined is the fact that they have established beyond a shadow of a doubt that the cause is a filtrable virus.

One great advantage which somewhat facilitated the work was the determination that ferrets are highly and more uniformly susceptible to the injection of the virus than dogs. This fact not only proved of a great advantage in the study of the pure form of distemper but also affords an opportunity to

carry with a certain degree of regularity the virus through passage so that it may be at all times available for investigation purposes.

While it is now known that the virus is present in the most concentrated form in the spleen and abdominal lymph glands and to a lesser degree in the liver and in the brain of those cases which show nervous symptoms, all efforts towards isolation and cultivation of the virus have thus far been unsuccessful. Another important fact in connection with the virus is its unstable quality, since thus far every effort to preserve it and at the same time retain its viability and virulence has been unsuccessful. It is natural that all the various known methods for the preservation of virus, both chemical and physical, have been employed but up till now without success. The only preservation which can be depended on is freezing, under which condition the virus will retain its potency for several months, but under other conditions it maintains its effectiveness only for several days. However, investigations are now being continued to develop means whereby preservation of the virus may be possible for a longer period of time.

Furthermore, the investigators have also established that in canine distemper there are no different strains of virus and that one strain of virus is effective in reproducing the disease and also for the active immunizations as developed by the Laidlaw-Dunkin method. In the early immunization work dating back to 1926, ferrets have been used and it has been conclusively established that a vaccine prepared from the tissues of the ferret were absolutely effective in protecting these animals from distemper. Subsequent experiments, however, have shown that the ferret vaccine is not dependable for immunization of dogs and *vice versa.*

However, the immunization experiments have also established that the formalized virus obtained from the spleen and lymph glands of infected dogs will protect susceptible dogs against many hundred infective doses of distemper virus. This has been proved with a uniform degree of regularity. Such immunity, however, lasts apparently only several months and in order to render such immunity lasting and solid, it is necessary to follow up the injection of the vaccine with a pure virus.

This procedure confers upon the animals a solid, lasting immunity, not only to artificial infections of large doses of virus but also, on continuous exposure to distemper under field conditions. This procedure therefore requires two injections, one with the vaccine followed up in ten days or so by the active virus. In consideration of the unstable quality of the virus, such procedure of course does not appear to be ideal for practical purposes. However, it may be developed so that the vaccination can be made available to all practicing veterinarians over the entire country.

In order to produce dependable results, it is natural that the products must be prepared with the most accurate technic and the method of preparation executed in every detail as recommended by the Laidlaw-Dunkin method. It is especially important that each lot of vaccine and not to a lesser degree each lot of virus be tested for its potency on ferrets and dogs and unless this is carefully carried out, the vaccination may fall in disrepute and thereby the effectiveness of the vaccination might be undeservedly discredited.

It is hoped that further work along this line will simplify the procedure for practical application, especially so with regard to the preservation of the virus. Efforts to produce an anti-distemper serum are also in progress and are very promising. Laidlaw and Dunkin have established, that repeated injections of the virus containing spleen and lymph glands from infected dogs into immune dogs (hyperimmunization) will produce a serum rich in immune bodies which, when injected into susceptible animals will protect them against many fatal doses of distemper virus. The advantage of the immune serum, however, are apparent since such serum can be applicable for immediate protection and also for curative purposes.

The Laidlaw-Dunkin method of immunization has been carried out in the field in

practice for a period of two years under normal and adverse conditions. In *The Veterinary Record,* February 2nd, 1929, Major A. A. Comerford published a paper on "Two Years' Field Experience with the Preventative Treatment of Distemper as Advocated by Laidlaw and Dunkin," in which a careful account is given on the results of immunizing dogs by this new method. The results were uniformly, it might be said 100% successful. At the meeting where this paper has been presented, the writer had the pleasure to listen to others who had had the opportunity of using this method of immunization and the general impressions were that at last a method of immunization against distemper has been developed which may be depended on to protect susceptible dogs against the infection.

Dr. P. P. Laidlaw (at left) and Major G. W. Dunkin, the two eminent scientists who successfully developed the active immunization against distemper.

The writer, who, with the authorization and commission from the American Distemper Committee, had the privilege of visiting the laboratories at Mill Hill and of conferring with the investigators, has returned very much encouraged with the results and it is hoped that this initial work will eventually lead to a simplified procedure enabling veterinarians to protect dogs against this most dreaded disease. The writer also takes this opportunity of expressing his appreciation to all those in England who extended to him numerous courtesies, especially so to Dr. P. P. Laidlaw and Major G. W. Dunkin, who at all times were ready to furnish him with all the desired information and demonstrations.

It is hoped that it will now be possible to proceed in the United States with the production of these products against canine distemper and no doubt all parties interested will feel grateful to those who were instrumental in inaugurating the investigations and above all to the eminent scientists who have successfully solved the great problem of the prevention of canine distemper.

VENEREAL WARTS IN DOGS

Do not attempt to treat this condition by snipping off the warts with scissors. Such treatment will be followed by a new crop for each one removed.

The condition responds readily to the administration of a full dose of syrup of iron iodid. The preparation, however, must be fresh. Syrup of iron iodid is unstable and useless after it has turned brown in color.

The dose for an adult Boston terrier is one dram three times daily and for other dogs in proportion to their size. The warts disappear in one to two weeks and do not return.

BANDAGING

It is the custom of some veterinarians to wind a bandage over the end at the beginning and at the last end to slit the bandage for a distance taking one tail around in either direction and tying them together. This may work well enough on the horse where the part to be bandaged is large, furnishing ample surface for friction and where the bandage can be wound tightly, but it is a very inefficient way to tie a bandage on a dog. Such a bandage is prone to slip around the leg thus unwinding and is practically sure to do so if the animal molests it with its teeth.

True Rabies or Pseudo Rabies

By ALEXANDER GLASS, Philadelphia

WITHIN a period of, probably, forty years, the writer has observed six cases of the condition familiarly known as "dumb rabies" and presenting the characteristic symptom of the dropped jaw. With one exception these cases have usually been coincident with a marked outbreak of true rabies in the neighborhood of the affected area. Fortunately all were held under observation and made good recoveries. Several other cases presenting certain symptoms were destroyed and no other record was made, except in two cases in which the laboratory report stated that the Negri bodies were present in the brain.

In dumb rabies a certain train of symptoms is usually found in all cases, but there is one pronounced symptom which, in the writer's experience was always absent in these cases, and that is the peculiar dull, lack lustre look seen in the eyes in true rabies. The characteristic symptoms presented in these cases were: pronounced paralysis of the lower jaw, slight protrusion of the tongue, and the tongue generally more moist, not showing the dry, dusty look usually seen in cases of true rabies. In two of the cases the animals were able to close the mouth and moisten the tongue, though the effort was immediately followed by dropping of the jaw. The animal would stand and look at the observer while showing the utter relaxation of the jaw. Examination of the mouth disclosed no foreign body, no dislodged tooth, nor anything to indicate an obstruction that would prevent the closing of the mouth. If a stick was placed under the lower jaw and the mouth mechanically lifted, the jaw immediately dropped to its former position when released.

In all of these cases the animal was particularly bright when its owner appeared; seemed to take an interest, and showed evidence of a concentrated, not a disordered, brain. Three of them ate all through the duration of the condition, but the others would lift the food, work it around in the mouth, and then drop it out, showing paralysis of the muscles of deglutition. Rapid loss of flesh was present, as well as staring coat and general nervousness. The majority of the animals did not sleep any length of time, but would jump up suddenly and walk about the cage or box, or go through the motion of drinking water although it is a question as to whether they really succeeded in swallowing, as the containers indicated, rather loss by spilling than by consumption on the part of the dog.

Throughout the duration of this condition—which lasted from ten days to three weeks—there was little or no evidence of the other symptoms so evident in true rabies; no howling, no biting or chewing, and no tendency to tear parts of the body. As the disease progressed the animal gradually began to have more power in the lower jaw, began to swallow certain foods, the jaws gradually coming closer together until finally perfect control of the lower jaw was established with only a slight drop of the jaw in the later course of the disease.

In closing one may ask: Is there such a thing as a recovery from true rabies, or was the condition here described a separate disease co-incident with the outbreak of rabies present, in the locality such, for instance, as some form of spinal meningitis? The question is a very interesting one and presents several viewpoints. The cases occurred during an established outbreak of rabies, and two of the dogs had been bitten, whether by a rabid dog the writer does not know. Four of them had no significant history. Is it possible that the absence of certain symptoms, so easily recognized in true rabies, the lack of eye symptoms and the clearness of the brain manifested in these cases would indicate the condition a mild form of rabies in which these symptoms would not be prominent, or was it something else?

A NOTED DOG CEMETERY

Although the cemetery of Père la Chaise is the most famous of all in Paris, Abelard and Heloise, Chopin, an unfortunate Frenchman who was guillotined in error, Patti and other interesting people being interred within its walls, there is another to which many a sad mourner repairs. Here, under the shade of the cypress trees, lie the mortal remains of countless dearly-loved cats and dogs, some having costly tomb-stones placed over them. Several of these monuments are embellished with statues of the departed ones, modelled from photographs, the sorrowing owner having carefully supervised the work. Most of the effigies in stone and marble are hideous beyond description, for the modern French sculptor is lamentably wanting in talent, while those who employ him are utterly without judgment. Sometimes a framed portrait of the pet occupies a commanding position, and there are wreaths everywhere.

A portion of the cemetery, known as "Poverty Corner," is set apart for the reception of cats and dogs who, having possessed no rich friends, are buried—and mourned—economically. "O'er some the green grass waves," as Mrs. Alexander, that admirable poetess of the 'sixties, has expressed it with simple pathos. An unassuming little board states the name of the occupant and its age when Death so cruelly tapped at the door, with (should there be space) a touching allusion to the defunct animal's virtues. One of these epitaphs reads: "Minousse was the dearest little Angora kitten. Run over by a brutal lorry when but three months old." Another board bears the inscription, "Sweetest Charles, my handsome tom-cat. A solace, a pleasure, a treasure, a faithful soul." A third is dedicated by a caretaker's widow and her five small children to one who evidently was very dear to the whole family. The screed runs: "Josephine our Persian cat and friend during four unforgettable years. Poisoned by an unknown murderer.

Whether the "happy dead" lie under mounds of earth or (to again quote the indispensable Mrs. Alexander) "have stones set over them," each part of the cemetery is kept trim and tidy. Every inch of grass is mown periodically; the gravel paths are free of disfiguring weeds; dead leaves do not lie unheeded.

RUBBER BANDS ON SMALL ANIMALS

The small animal practitioner encounters rubber bands on various parts of the anatomy of small animals, with almost unbelievable frequency. They come to us in a variety of sizes and in several different locations. The favorite place to the torturers who place them on the animals is around the tail, but they sometimes come around the leg, around the ear, the entire lower jaw, the tongue, the teeth, or anywhere else that the apparent saddist or mischievous child may choose to put them. They form a perfect tourniquet, and unless removed before the lapse of many days, will cause a complete slough of the organ or appendage upon which they have been placed.

The treatment, of course, is to remove the band and then to treat the wound as the condition may indicate. These wounds sometimes leave permanent ugly scars. Particularly is this outcome likely in the case of bands that encircle the lower jaw.

Newark, N. J. M. J. Hughes.

NOTICE

For lack of space, a number of articles prepared for this special issue on Small Animal Practice must be held over until next month. Included among the articles held over are: "The Care and Treatment of Primates (Monkeys) in a Zoological Park," by C. V. Noback; "A General Survey of the Rabies Situation," by D. W. Baker; "Report of the 'Field' Distemper Investigations," by H. J. Milks; "Similarity of Black Tongue and Infectious Hemorrhagic Gastro-Enteritis," by Alexander Glass; "Treatment of Caged Birds," by W. J. Ratigan; "Diverticulum of the Esophagus due to Congenital Malformation," by A. Gow; and "Tumefied Orbital Gland," by H. J. Milks.